Fifth Five-Year Review Report
for
Hollingsworth Solderless Terminal
FLD004119681

Fort Lauderdale
Broward County, Florida

September 2016

United States Environmental Protection Agency
Region 4
Atlanta, Georgia

Approved by:

Franklin E. Hill, Director
Superfund Division

Date:

8/31/16

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for
Hollingsworth Solderless Terminal
700 Northwest 57th Place
Fort Lauderdale
Broward County, Florida

Tables

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List of Acronyms

ARAR	Applicable or Relevant and Appropriate Requirement
AROD	Amended Record of Decision
BCEQCB	Broward County Environmental Quality Control Board
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulations
CIC	Community involvement coordinator
Cis-12DCE	cis-1,2-Dichloroethylene
COC	Contaminant of Concern
EP	Extraction Procedure Toxicity Characteristic
EPA	United States Environmental Protection Agency
ESD	Explanation of Significant Differences
FAC	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
FYR	Five-Year Review
HSTC	Hollingsworth Solderless Terminal Company
HQ	Hazard Quotient
IC	Institutional control
MCL	Maximum Contaminant Level
µg/kg	Micrograms per Kilogram
µg/L	Micrograms per Liter
mg/kg	Milligrams per Kilogram
mg/L	Milligrams per Liter
NA	Not applicable
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NPL	National Priorities List
O&M	Operation and Maintenance
OU	Operable Unit
PRP	Potentially Responsible Party
RAO	Remedial Action Objective
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
RPM	Remedial Project Manager
SCTL	Soil Cleanup Target Level
SESD	Science and Ecosystem Support Division
SSC	Superfund State Contract
SVE	Soil Vapor Extraction
TCE	Trichloroethylene
TCLP	Toxicity Characteristic Leaching Procedure
trans12DCE	Trans-1,2-Dichloroethylene
VISL	Vapor Intrusion Screening Level
VOC	Volatile Organic Compound

Executive Summary

The 3.5-acre Hollingsworth Solderless Terminal Superfund site (the Site) is located at 700 Northwest 57th Place, Fort Lauderdale, Broward County, Florida. The Hollingsworth Solderless Terminal Company (HSTC) manufactured solderless electrical connectors from 1968 until 1982. The manufacturing process included heat treatment in molten salt baths, degreasing using solvents, and electroplating with tin and nickel. The manufacturing process generated wash water and process wastewater contaminated with trichloroethylene (TCE) and heavy metals, which were discharged to drainfields and an injection well located on site, resulting in contamination of soil and groundwater. The U.S. Environmental Protection Agency selected a site remedy that included excavation of source area soils, in-situ vapor extraction of chlorinated hydrocarbons from contaminated soil and pumping and treatment of groundwater followed by in-situ enhanced bioremediation.

The remedy currently protects human health and the environment because contaminated soils have been removed such that no land use restrictions are needed, groundwater contamination remains on site and institutional controls are in place that restrict the use of groundwater at the Site. In order for the remedy to be protective in the long term, site monitoring wells need to be repaired and monitored on a regular basis.

The triggering action for this five-year review (FYR) was the signing of the previous FYR on September 7, 2011.

Five-Year Review Summary Form

SITE IDENTIFICATION		
Site Name: Hollingsworth Solderless Terminal		
EPA ID: FLD004119681		
Region: 4	**State:** FL	**City/County:** Fort Lauderdale/Broward
SITE STATUS		
NPL Status: Final		
Multiple OUs? No	**Has the site achieved construction completion?** Yes	
REVIEW STATUS		
Lead agency: EPA		
Author name: Galo Jackson (EPA), Claire Marcussen (Skeo), Sarah Alfano (Skeo)		
Author affiliation: EPA and Skeo		
Review period: December 2015 – September 2016		
Date of site inspection: February 23, 2016		
Type of review: Policy		
Review number: 5		
Triggering action date: September 7, 2011		
Due date *(five years after triggering action date)*: September 7, 2016		

Five-Year Review Summary Form (continued)

Issues/Recommendations
OU(s) without Issues/Recommendations Identified in the Five-Year Review:
None

Issues and Recommendations Identified in the Five-Year Review:

OU(s): 1	**Issue Category:** Operations and Maintenance			
	Issue: Several monitoring wells are damaged and not secure, and not all wells have been monitored on a regular basis.			
	Recommendation: Repair all wells that were damaged and not secured, and ensure all relevant wells are monitored on a regular basis.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Implementing Party**	**Oversight Party**	**Milestone Date**
No	Yes	EPA	EPA/State	9/7/2017

Sitewide Protectiveness Statement
Protectiveness Determination: Short-term Protective
Protectiveness Statement: The remedy currently protects human health and the environment because contaminated soils have been removed such that no land use restrictions are needed, groundwater contamination remains on site and institutional controls are in place that restrict the use of groundwater at the Site. In order for the remedy to be protective in the long term, site monitoring wells need to be repaired and monitored on a regular basis.

Environmental Indicators
- Current human exposures at the Site are under control. - Current groundwater migration is under control.

Are Necessary Institutional Controls in Place?
☒ All ☐ Some ☐ None

Has EPA Designated the Site as Sitewide Ready for Anticipated Use?
☒ Yes ☐ No

Has the Site Been Put into Reuse?
☒ Yes ☐ No

Fifth Five-Year Review Report
for
Hollingsworth Solderless Terminal Superfund Site

1.0 Introduction

The purpose of a five-year review (FYR) is to evaluate the implementation and performance of a remedy in order to determine if the remedy will continue to be protective of human health and the environment. FYR reports document FYR methods, findings and conclusions. In addition, FYR reports identify issues found during the review, if any, and document recommendations to address them.

The U.S. Environmental Protection Agency prepares FYRs pursuant to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Section 121 and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). CERCLA Section 121 states:

> If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each 5 years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews.

The EPA interpreted this requirement further in the NCP, 40 Code of Federal Regulations (CFR) Section 300.430(f)(4)(ii), which states:

> If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after initiation of the selected remedial action.

Skeo, an EPA Region 4 contractor, conducted the FYR and prepared this report regarding the remedy implemented at the Hollingsworth Solderless Terminal Superfund site (the Site) in Fort Lauderdale, Broward County, Florida. The EPA's contractor conducted this FYR from December 2015 to September 2016. The EPA is the lead agency for developing and implementing the remedy for the Superfund-financed cleanup at the Site. The Florida Department of Environmental Protection (FDEP), as the support agency representing the State of Florida, has reviewed all supporting documentation and provided input to the EPA during the FYR process.

This is the fifth FYR for the Site. The triggering action for this policy review is the previous FYR. The FYR is required due to the fact that hazardous substances, pollutants or contaminants remain at the Site above levels that allow for unlimited use and unrestricted exposure. The Site consists of one operable unit (OU).

2.0 Site Chronology

Table 1: Chronology of Site Events

Event	Date
The EPA was notified by the Broward County Environmental Quality Control Board (BCEQCB) about groundwater contamination at the Site	November 1, 1980
The Potentially Responsible Party (PRP) filed for Chapter 11 Bankruptcy	November 6, 1981
The EPA completed a preliminary assessment.	September 1, 1982
The EPA listed the Site on the National Priorities List (NPL)	September 8, 1983
The EPA completed a remedial investigation/feasibility study (RI/FS) and issued a Record of Decision (ROD)	April 10, 1986
The EPA began remedial design for the soil vapor extraction (SVE) system	December 1, 1986
The EPA completed an interim soil removal action in the East Drainfield	February 13, 1987
The EPA completed remedial design of the SVE system	September 23, 1987
The EPA began soil and groundwater remedial construction	December 10, 1987
The EPA and FDEP entered into a state Superfund State Contract (SSC) for remedy construction	September 1988
The EPA completed remedy construction of the SVE system in the East Drainfield and FDEP entered into a second SSC to share the costs of additional source remediation	December 1991
The EPA groundwater pump-and-treat system became fully operational	July 17, 1992
The EPA completed the Preliminary Close-out Report	June 4, 1993
The EPA began remedial action for groundwater	June 16, 1993
The EPA completed the remedial action for groundwater	October 24, 1994
The EPA issued the first FYR	January 22, 1996
The EPA began a second remedial design to address additional source contamination at the former South and West Drainfields	February 9, 1998
The EPA completed the second remedial design	January 5, 2000
The EPA issued the second FYR	April 3, 2000
The EPA completed a supplemental RI of soils in the South and West Drainfields	June 30, 2001
The EPA issued an Explanation of Significant Differences (ESD) to address additional soil contamination in the former South Drainfield and the septic tank in the West Drainfield	October 1, 2001
The EPA began the remedial design for the soil remedy at the South and West Drainfields.	October 30, 2001
The EPA completed the remedial design for the soil remedy at the South and West Drainfields.	February 1, 2002
The EPA completed the remedial action in the former South Drainfield and the septic tank in the West Drainfield	September 18, 2002
The EPA began a third remedial design to address residual groundwater contamination in the vicinity of the West Septic Tank and South Drainfield	March 30, 2003
The EPA completed the third FYR	December 20, 2005
The EPA completed the remedial design for groundwater in-situ enhanced bioremediation	June 29, 2006
The EPA properly abandoned the injection well that was historically used for waste disposal	October 24, 2006
The EPA completed the in-situ enhanced bioremediation pilot test for groundwater contamination in the South Drainfield and West Septic Tank	September 2007
The EPA issued an amended ROD (AROD) to address residual groundwater contamination in the South Drainfield and West Septic Tank using bioremediation	November 24, 2008
The EPA began remedial design for bioremediation of groundwater contamination in the South Drainfield and West Septic Tank area	July 20, 2009
The EPA completed remedial design for bioremediation of groundwater contamination	November 25, 2009
The EPA began remedial action for residual groundwater contamination	April 25, 2011
The EPA issued the fourth FYR	September 7, 2011
The EPA completed remedial action for residual groundwater contamination	September 29, 2011

3.0 Background

3.1 Physical Characteristics

The 3.5-acre Site is located in a commercial and industrial area of Fort Lauderdale, Florida (Figure 1). Two buildings are located on the Site, separated by Northwest 57th Place (a street). Hollingsworth Solderless Terminal Company (HSTC) used the southern building, formerly known as Plant #1, for degreasing operations. HSTC used the northern building, formerly known as Plant #2, strictly as an assembly and storage facility and was not used for wet processes. Northwest 57th Court borders Plant #1 to the south. HSTC disposed of wash and process waters, which contained high concentrations of trichloroethylene (TCE) and heavy metals, in several on-site drainfields surrounding former Plant #1, by surface discharges and in a 100-foot-deep injection well on site (Figure 2). In addition, HSTC used waste TCE to clean Plant #1 floors. Various tenants currently use both buildings for commercial operations.

The Biscayne Aquifer underlies the Site; it is composed of limestone and sandstone and is highly permeable and unconfined. In the vicinity of the Site, the top of the Biscayne aquifer is near ground surface. The Biscayne Aquifer extends down to about 200 to 250 feet below ground surface and consists of several zones. The residual contamination at the Site is present in the upper zone, which consists of unconsolidated sands down to about 50 feet. Beneath the upper zone, a transition zone is present, consisting of cemented shell and sandstone. Beneath the transition zone, a limestone layer forms the major water producing zone of the Biscayne aquifer. Below the Biscayne aquifer is the relatively impermeable Hawthorn Formation, which is about 400 feet thick. The Hawthorn Formation serves as a confining unit between the Biscayne aquifer and the brackish water of the underlying Floridan aquifer. The regional direction of groundwater flow is to the southeast.

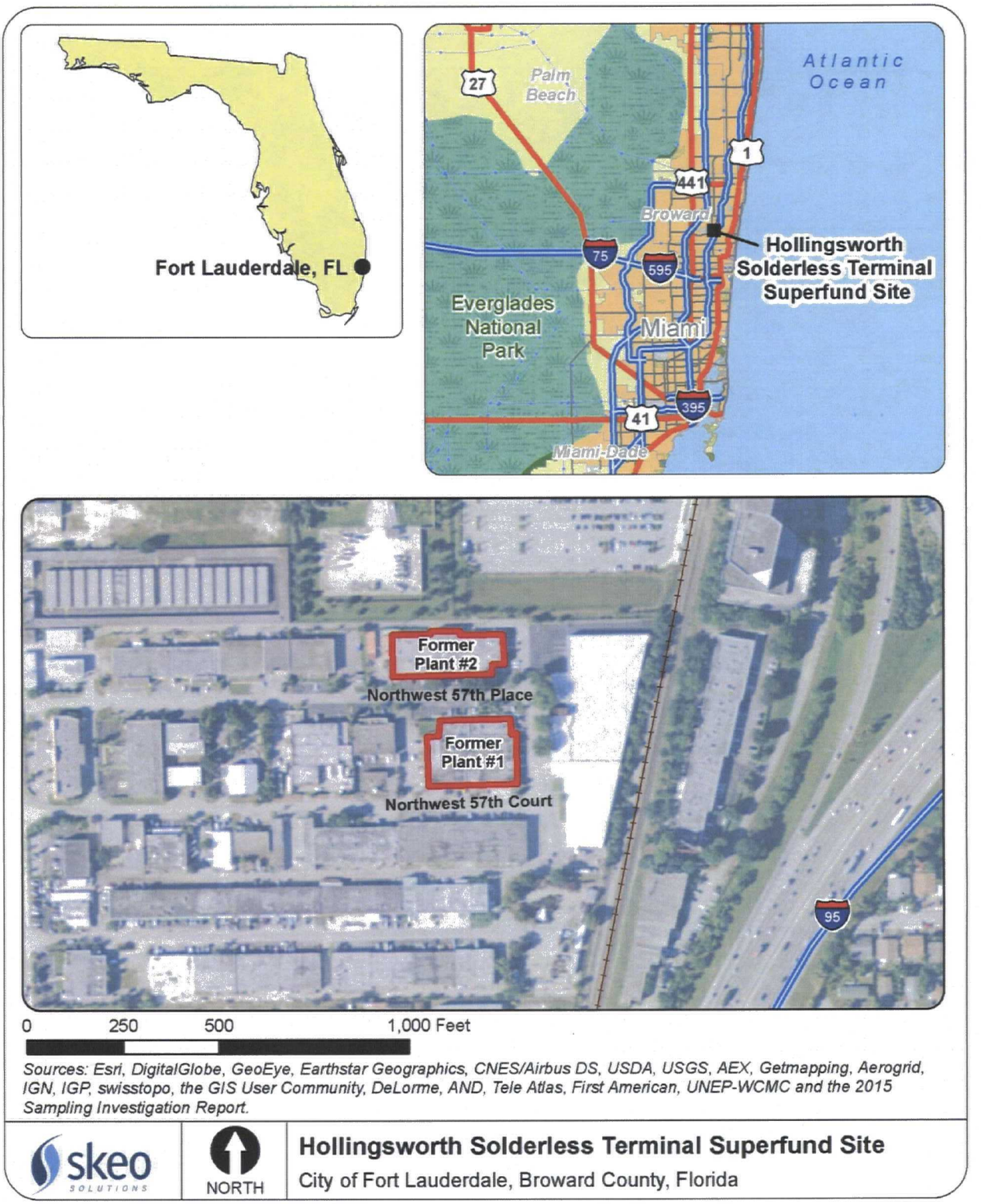
The Atlantic Ocean is located 3.6 miles to the east of the Site, and the Everglades are approximately 10 miles to the west. Cypress Creek Canal is located about 1.5 miles to the north and the Middle River Canal 2 miles to the south. The Site is located within the 100-year floodplain and has a relatively flat topography.

3.2 Land and Resource Use

The Site is located in an industrial park in Fort Lauderdale that includes a number of small warehouse buildings housing commercial and light industrial business. Between 1968 and 1982, HSTC manufactured solderless electrical terminals. After filing of bankruptcy in November 1982, HSTC dismantled and sold its plant equipment in Plant #1. The facility was purchased in a tax sale in 2004 and subsequently remodeled. Plant #1 currently houses several tenants, including a uniform distribution center, a law firm, an international car dealership, a custom woodworking company and a moving company. Plant #2 is used as office space.

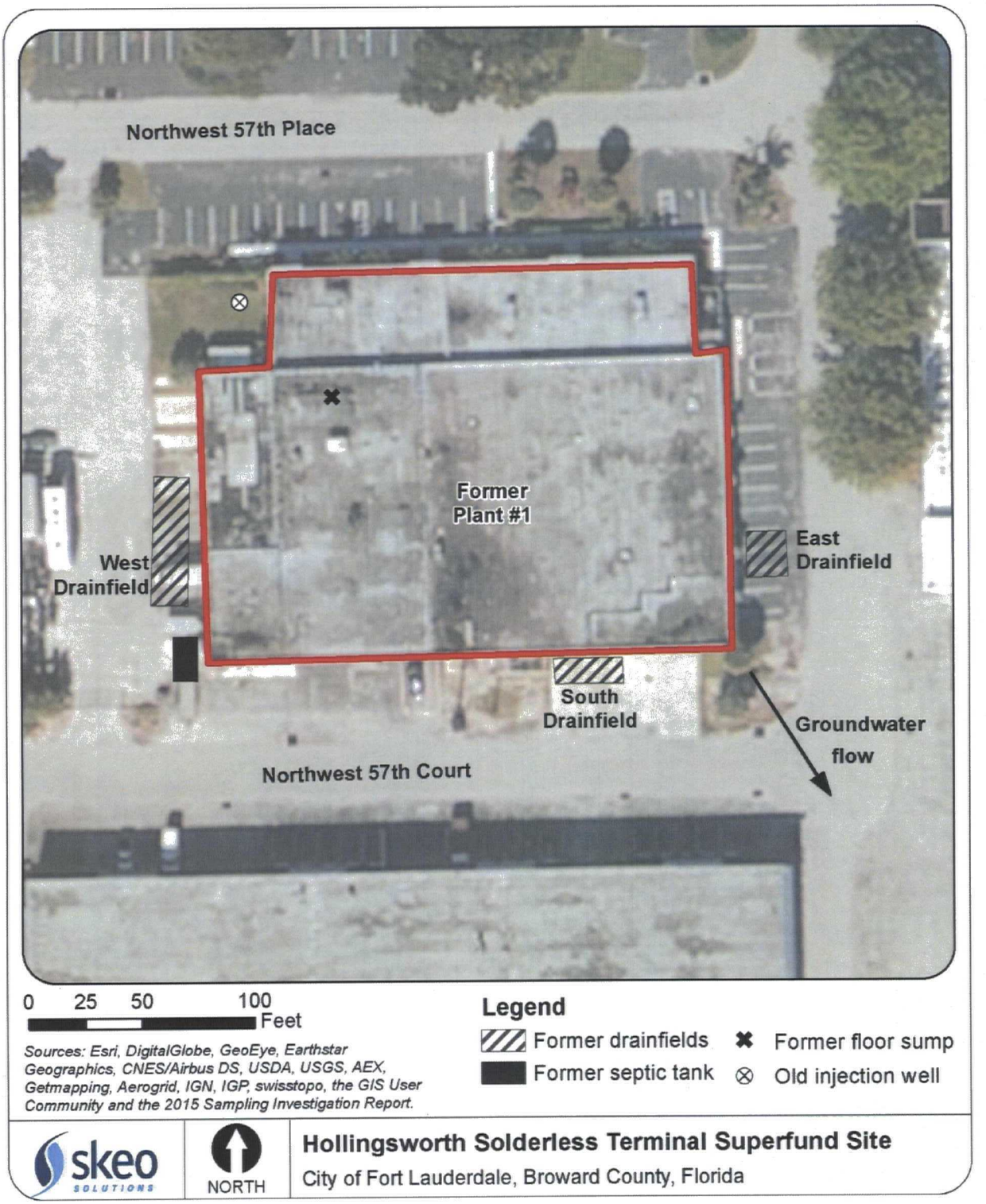
The City of Fort Lauderdale's Prospect Well Field, which supplies water to the city, is located about 2 miles west of the Site. The well field draws water from the Biscayne aquifer. Site contamination has not impacted the city water supply.

Figure 1: Site Vicinity Map



Disclaimer: This map and any boundary lines within the map are approximate and subject to change. The map is not a survey. The map is for informational purposes only regarding the EPA's response actions at the Site.

Figure 2: Detailed Site Features Map



Disclaimer: This map and any boundary lines within the map are approximate and subject to change. The map is not a survey. The map is for informational purposes only regarding the EPA's response actions at the Site.

3.3 History of Contamination

HSTC's manufacturing process included the use of molten salt baths, degreasing parts and electroplating, which is a process that involves the application of metal coatings using an electric current. The company disposed of wash and process waters, which contained high concentrations of TCE and heavy metals, by allowing waste liquids to infiltrate into the ground through industrial drainfields and by washing the floors and equipment with waste TCE that may have flowed into the building floor sump. In addition, wastes were also pumped into a 100-foot-deep on-site injection well. The industrial drainfields are referred to as the East, South and West Drainfields. In addition, a former septic tank was located south of the West Drainfield (Figure 2). The waste disposal practices contaminated soil and groundwater with TCE and heavy metals.

3.4 Initial Response

Beginning in 1977, the Broward County Environmental Quality Control Board (BCEQCB) conducted initial investigations regarding environmental issues at the facility. In 1980, during a routine inspection, BCEQCB discovered that HSTC was contaminating groundwater by disposing of process wastes into an injection well. In June 1981, BCEQCB requested assistance from the EPA under CERCLA. HSTC subsequently filed for Chapter 11 bankruptcy in November 1981 and ceased operations in 1982.

3.5 Basis for Taking Action

The EPA conducted a preliminary assessment in 1982 and listed the Site on the National Priorities List (NPL) in 1983. The EPA was unable to identify any viable potentially responsible parties (PRPs) for the Site; therefore, the EPA is using federal funds for site cleanup activities. The EPA subsequently completed a remedial investigation/feasibility study (RI/FS) in 1986 to determine the extent of contamination and evaluate possible cleanup strategies. Based on the results of the RI/FS, there were no current completed human exposure pathways to Site contaminants. However, there was a probable pathway associated with direct contact with soil if any future excavation is conducted and also a potential for future exposure to groundwater downgradient of the Site. The results of the public health evaluation indicated that lifetime cancer risks associated with future exposure to on-site groundwater were in excess of 1×10^{-4} due to presence of vinyl chloride and TCE. Although access to the Site was restricted with a fence, the public health evaluation also found that unacceptable noncancer health effects could occur as a result of future exposure of children to metals in on-site soils.

4.0 Remedial Actions

A number of remedial alternatives were considered for the Site, and final selection was made based on an evaluation of each alternative against the following evaluation criteria presented in the April 1986 Record of Decision (ROD):

1. Overall protection of human health and the environment
2. Level of cleanup
3. Reliability
4. Special engineering considerations
5. Implementability
6. Capital, operations and maintenance costs
7. Institutional considerations

8. Time required for implementation

4.1 Remedy Selection

The EPA selected the Site soil and groundwater remedies in the 1986 ROD, which defined the following remedial action objectives (RAOs) for site cleanup:

- Prevent further migration of contaminated groundwater into the Biscayne aquifer.
- Remove the sources of contamination from overlying soil and drainfields.

The major components of the selected remedy in the 1986 ROD included:

- Proper abandonment of the old injection well and all other on-site wells.
- On-site treatment of volatile organic compound (VOC)-contaminated soil in the East Drainfield.
- Extraction and treatment of VOC-contaminated groundwater.
- Injection of treated groundwater.

The EPA issued an Explanation of Significant Differences (ESD) in 2001 and an amended ROD (AROD) in 2008 to remediate additional soil and groundwater contamination at the Site in the South Drainfield and septic tank area near the West Drainfields. The 2001 ESD and 2008 AROD did not change the RAOs established in the 1986 ROD but included the following additional remedial components:

- Excavation of VOC-contaminated soils in the former South Drainfield and the septic tank in the West Drainfield.
- Replacement of the 1986 ROD's pump-and-treat remedy with in-situ enhanced bioremediation in the affected groundwater zone.
- Implementation of institutional controls for groundwater.

The 1986 ROD established contaminant of concern (COC) cleanup levels for the East Drainfield area soils (Table 2). The 2001 ESD established soil cleanup goals for the South and West Drainfield areas (Table 3). The 2008 AROD incorporated the updated state maximum contaminant level (MCL) for TCE and included a new COC, cis-1,2-dichloroethylene (cis-12DCE), a degradation product of TCE consistently detected above the federal MCL and the FDEP MCL during past investigation and remedial activities (Table 4).

Table 2: 1986 ROD Soil COC Cleanup Goals for East Drainfield

Soil COC	Cleanup Goal
Total VOCs	1 mg/kg
Copper	10 mg/L[a]
Lead	0.5 mg/L[a]
Nickel	1 mg/L[a]

Soil COC	Cleanup Goal
Notes: a. Cleanup goals for metals are based on leaching from soil to groundwater using the Extraction Procedure Toxicity Characteristic (EP) toxicity test (1986 ROD, page 15). mg/kg – milligrams per kilogram mg/L – milligrams per liter	

Table 3: 2001 ESD Soil COC Cleanup Goals for South and West Drainfields

Soil COC	Cleanup Goal (µg/kg)[a,b]
cis-12DCE	400
trans-1,2-dichloroethylene (trans12DCE)	700
Trichloroethylene (TCE)	30
Vinyl chloride	7
Notes: a. Leachability based on groundwater criteria specified in 62-777 Florida Administrative Code (FAC) Table II Soil Cleanup Target Levels (SCTLs). b. Values specified in Table 1 of the September 2002 Remedial Action Report. µg/kg – micrograms per kilogram	

Table 4: 2008 AROD Groundwater COC Cleanup Goals

Groundwater COC	Cleanup Goal (µg/L)[a]
cis-12DCE	70
trans12DCE	100
TCE	3.0
Vinyl chloride	1.0
Note: a. Obtained from Table 6.1 of the 2008 AROD. Represent the lower of the federal and state MCLs. µg/L – micrograms per liter	

4.2 Remedy Implementation

Soil

During the remedial design phase in 1987, the EPA conducted additional field studies to supplement and verify available site data. In February 1987, the EPA attempted to excavate and remediate contaminated soil from the East Drainfield area, as part of an interim removal action. However, due to the high water table, the EPA discontinued the removal action and decided that a soil vacuum extraction (SVE) system was needed. Metals were not detected above the ROD performance standards during the 1987 investigation, and therefore were not considered as COCs in the final remedial design. The EPA completed the remedial design and began remedial construction at the end of 1987. The EPA completed the construction of the SVE in January 1991. The SVE removed VOCs to concentrations below the 1 milligram per kilogram (mg/kg) cleanup goal by July 1991 and the EPA subsequently dismantled the SVE system in March 1992.

Additional soil required excavation at the South Drainfield and septic tank area near the West Drainfields, as documented in the 2001 ESD. The EPA completed the remedial design between October 2001 and February 2002. The EPA remediated soils in the South Drainfield and excavated the septic tank in the West Drainfield area in September 2002. Soils exceeding toxicity characteristic leaching procedure (TCLP) criteria were stabilized and shipped off site to a permitted hazardous waste treatment and storage facility while the remaining nonhazardous soils were sent off site to a nonhazardous waste landfill.

In 2000, to update the metals soil data from the North Field surface discharge area, a surface soil sample was analyzed for the target analyte metals. The sample location was selected as the probable area where HSTC operational discharges occurred based on topography and location. Copper (7,910 mg/kg) was the only constituent detected above the Florida soil cleanup target levels (SCTLs) for residential use of 150 mg/kg; however, this concentration is well below the target clean-up level for commercial/industrial use (89,000 mg/kg). The current EPA Regional Screening Levels (RSLs) for surface soil under residential and industrial use are 3,100 and 47,000 mg/kg, respectively.

Groundwater

The EPA completed the construction of the groundwater treatment system by December 1991 and determined the system was operational in July 1992. The system comprised of three extraction wells, an air-stripping tower, and two injection wells through which treated effluent was injected into the Biscayne aquifer. In 1994, the treatment system discharge was no longer meeting the permit requirements, due to fouling of the packing material in the air stripper. The EPA shut the treatment system down in August 1994 and removed the system from the Site in November 1994. Groundwater monitoring following demobilization of the remedial system indicated that groundwater contaminant levels had increased, suggesting continuing contaminant sources near the South and West Drainfields. In September 2002, the EPA completed the soil excavation in the area of the South Drainfield and removed a septic tank located near the West Drainfield. In October 2006, the EPA abandoned the old injection well. In order to meet the ROD's groundwater remediation goals, the EPA conducted an in-situ enhanced bioremediation pilot test from April 2005 through September 2007. Based on the pilot test results, the EPA amended the 1986 ROD in 2008 to select bioremediation treatment of groundwater in the source areas. The EPA completed remedial design between July and November 2009. The EPA completed the remedial action between April 2011 and September 2011; the bioremediation included injection of liquid substrates by direct-push into eight injection wells near the South Drainfield and eight injection wells near the West Drainfield.

4.3 Operation and Maintenance (O&M)

The EPA established an O&M plan for the groundwater extraction and treatment system in 1992, however, since the system was dismantled in 1994 and replaced with an in-situ bioremediation remedy, a revised O&M plan has not been prepared for the Site. The EPA continues to conduct the long-term monitoring of groundwater and repairs damaged monitoring wells as needed. The O&M activities remaining for the Site are long-term monitoring of groundwater and routine repairs to monitoring wells that have been damaged. The EPA's Science and Ecosystem Support Division (SESD) conducts the annual sampling at the Site. Table 5 summarizes the O&M costs that have occurred during this FYR period. Costs are not presented for 2011 or 2014 as groundwater was not sampled. The costs for 2015 are higher than 2012 and 2013 because more wells were sampled.

Table 5: O&M Cost Summary (2011 - 2015)

Year	Annual Average Cost
2011	--
2012	$ 5,988
2013	$ 7,475
2014	--
2015	$ 28,000
Notes: -- No sampling occurred in 2011 or 2014,	

5.0 Progress Since the Last Five-Year Review

The protectiveness statement from the 2011 FYR for the Site stated the following:

The remedial actions at the HSTC Site have been almost completely effective in accomplishing the remedial objectives. The remedy implemented at the HSTC Site protects health and the environment in the short term, as well as the long term.

No issues were identified in the 2011 FYR.

6.0 Five-Year Review Process

6.1 Administrative Components

The EPA Region 4 initiated the FYR in December 2015 and scheduled its completion for September 2016. The EPA remedial project manager (RPM) Galo Jackson led the EPA site review team, which also included the EPA community involvement coordinator (CIC) L'Tonya Spencer and contractor support provided to the EPA by Skeo. In January 2016, the EPA held a scoping call with the review team to discuss the Site and items of interest as they related to the protectiveness of the remedy currently in place. The review schedule established consisted of the following activities:

- Community notification.
- Document review.
- Data collection and review.
- Site inspection.
- Local interviews.
- FYR Report development and review.

6.2 Community Involvement

In February 2016, the EPA published a public notice in the *Sun Sentinel* newspaper announcing the commencement of the FYR process for the Site, providing contact information for RPM Galo Jackson and CIC L'Tonya Spencer, and inviting community participation. The press notice is available in Appendix B. No one contacted the EPA as a result of the advertisement.

The EPA will make the final FYR Report available to the public. Upon completion of the FYR, the EPA

will place copies of the document in the designated site repository: Broward County Public Library, 100 S. Andrews Ave. - Level 5, Fort Lauderdale, FL, 33301.

6.3 Document Review

This FYR included a review of relevant site-related documents, including the ROD, AROD and ESD. Appendix A provides a complete list of the documents reviewed.

Applicable or Relevant and Appropriate Requirements (ARARs) Review

CERCLA Section 121(d)(1) requires that Superfund remedial actions attain "a degree of cleanup of hazardous substances, pollutants, and contaminants released into the environment and of control of further release at a minimum which assures protection of human health and the environment." The remedial action must achieve a level of cleanup that at least attains those requirements that are legally applicable or relevant and appropriate.

- Applicable requirements are those cleanup standards, standards of control and other substantive requirements, criteria or limitations promulgated under federal environmental or state environmental or facility siting laws that specifically address a hazardous substance, remedial action, location or other circumstance found at a CERCLA site.

- Relevant and appropriate requirements are those standards that, while not "applicable," address problems or situations sufficiently similar to those encountered at the CERCLA site that their use is well suited to the particular site. Only those state standards more stringent than federal requirements may be applicable or relevant and appropriate.

- To-Be-Considered criteria are non-promulgated advisories and guidance that are not legally binding, but should be considered in determining the necessary remedial action. For example, To-Be-Considered criteria may be particularly useful in determining health-based levels where no ARARs exist or in developing the appropriate method for conducting a remedial action.

Chemical-specific ARARs are health- or risk-based numerical values or methodologies which, when applied to site-specific conditions, result in the establishment of numerical values. These values establish an acceptable amount or concentration of a chemical that may remain in, or be discharged to, the ambient environment. Examples of chemical-specific ARARs include MCLs under the federal Safe Drinking Water Act and ambient water quality criteria enumerated under the federal Clean Water Act.

Action-specific ARARs are technology- or activity-based requirements or limits on actions taken with respect to a particular hazardous substance. These requirements are triggered by a particular remedial activity, such as discharge of contaminated groundwater or in-situ remediation.

Location-specific ARARs are restrictions on hazardous substances or the conduct of the response activities solely based on their location in a special geographic area. Examples include restrictions on activities in wetlands, sensitive habitats and historic places.

Remedial actions are required to comply with the chemical-specific ARARs identified in the ROD. In performing the FYR for compliance with ARARs, only those ARARs that address the protectiveness of the remedy are reviewed.

Groundwater

According to the 1986 ROD, groundwater ARARs include the most stringent of the federal and state primary drinking standards or MCLs. As shown in Table 6, groundwater MCLs have not changed since the signing of the 2008 AROD.

Table 6: Previous and 2016 ARARs for Groundwater COCs

COC	2008 AROD Cleanup Goal (µg/L)[a]	Current MCL		Most stringent MCL (µg/L)	ARAR Change
		Federal µg/L)[b]	State (µg/L)[c]		
cis-12DCE	70	70	70	70	No change
trans12DCE	100	100	100	100	No change
TCE	3	5	3	3	No change
Vinyl chloride	1	2	1	1	No change

Notes:
a. Values from Table 6.1 of the 2008 AROD.
b. Federal MCLs are available at http://www.epa.gov/your-drinking-water/table-regulated-drinking-water-contaminants#Organic (accessed 1/4/2016).
c. FDEP MCLs are available at http://www.dep.state.fl.us/water/drinkingwater/vol_con.htm (accessed 1/4/2016).

Soil

Federal ARARs have not been established for the soil COCs; however, the 2001 ESD identified Florida soil cleanup standards promulgated under Florida Administrative Code (FAC) Chapter 62-777. The levels, SCTLs, are based on leachability to groundwater. As shown in Table 7, 2001 leachability-based SCTLs have not changed from the most current leachability-based SCTLs established by the FDEP in 2005. The protectiveness of the leachability-based soil cleanup goals based on direct exposure and current toxicity values is evaluated further in Section 7.2.

Table 7: Previous and Current State ARARs for Soil COCs

Soil COC	2001 ESD Leachability-based SCTL (µg/kg)[a]	Current Leachability-based SCTL (µg/kg)[b]
cis-12DCE	400	400
trans12DCE	700	700
TCE	30	30
Vinyl chloride	7	7

Notes:
a. Leachability based on groundwater criteria specified in 62-777 FAC Table II SCTLs.
b. Values obtained from http://dep.state.fl.us/waste/quick_topics/publications/wc/FinalGuidanceDocumentsFlowCharts_April2005/TechnicalReport2FinalFeb2005(Final3-28-05).pdf (accessed 1/4/16)
µg/kg – microgram per kilogram

Institutional Control Review

The remedial action selected in the 1986 ROD did not include institutional controls for groundwater. However, the groundwater contamination remains within the site boundaries and the Site is located within a delineated area pursuant to Florida's Groundwater Delineation Program, Rule 62-524.700(2) of the FAC, which prohibits permitting and construction of new potable wells in a delineated area if a

potable water supply is available within 500 feet of the property boundary, except under limited circumstances. In addition, Rules 62-524 impose restrictions on well construction, water quality testing and permitting of groundwater wells located in delineated areas. According to the 2008 AROD, because the conditions of the rule have been met and none of the exceptions apply, Rule 62-524.700(2), FAC, serves to prohibit groundwater use at the Site. Thus, the 2008 AROD amended the remedial action selected in the 1986 ROD to include Rule 62-524.700(2), FAC, as an institutional control for the groundwater remedy at the Site. According to the 2008 AROD, once the COC remediation levels have been achieved, the EPA in consultation with FDEP will make a determination on whether groundwater will be available for unrestricted uses within the bounds of the local ordinances. Figure 3 presents the location of the Site parcels relative to the Groundwater Delineation Area.

Skeo staff conducted research online using the Broward County Property Appraiser Office's website and found the deed information pertaining to the Site listed in Table 8.

Table 8: Deed Documents from Broward County Property Appraiser Office

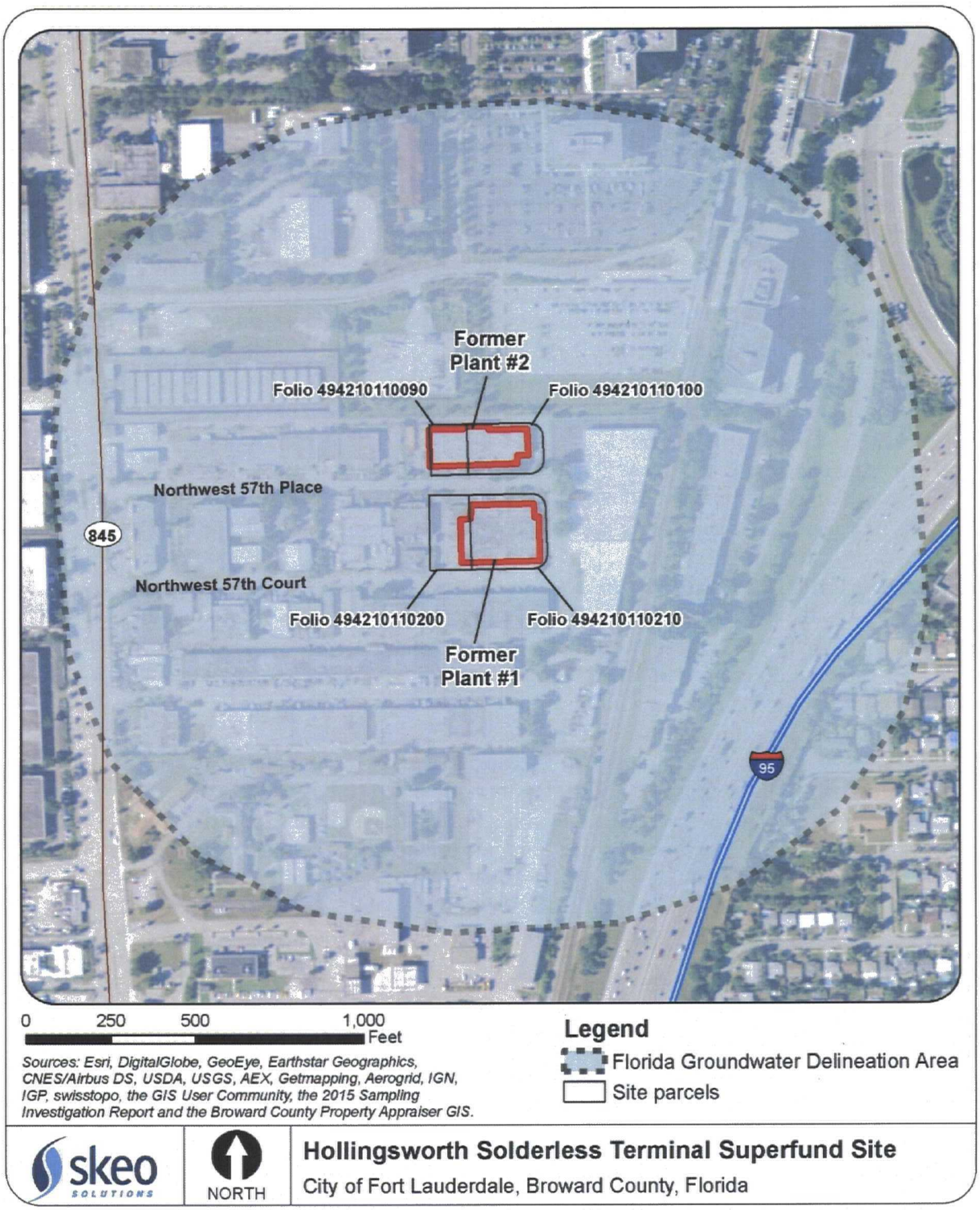
File Date	Type of Document	Description	Book #	Page #
3/22/1971	Warranty Deed	Transfer of lot 9 Block 2 of Powerline Industrial Mall from private party to HSTC.	4452	32
3/18/1971	Warranty Deed	Transfer of lots 10 and 11 of Powerline Industrial Mall from Tram Inc. to HSTC.	4450	86
5/24/2001	Tax Deed	Royal Palm Beach Investors, Inc. purchased lots 10 and 11 of Powerline Industrial Mall from HSTC.	31634	1144
2/22/2006	Warranty Deed	Allows for the EPA to undertake all post-cleanup monitoring and O&M necessary to remediate the property.	41505	814
Note: Source: https://officialrecords.broward.org/oncorev2/ (Accessed on 3/30/16)				

Table 9 lists the institutional controls associated with the Site.

Table 9: Institutional Control (IC) Summary Table

Media	ICs Needed	ICs Called for in the Decision Documents	Impacted Parcel(s)	IC Objective	Instrument in Place
Groundwater	Yes	Yes	494210110210 and 494210110200	Prevent exposure to contaminated groundwater	The Site lies within a Florida Groundwater Delineation Area, which restricts well placement.[1] Permitting and construction of new potable wells are prohibited if a potable water supply is available within 500 feet of the property boundary.
Soil	No	No	NA	NA	NA
Notes: 1. Florida's groundwater delineation information is available online at: http://www.dep.state.fl.us/water/groundwater/delineate.htm. NA – Institutional controls are not needed for soils because the soil cleanup is protective for all uses (see Section 7.2).					

Figure 3: Institutional Control Base Map



Disclaimer: This map and any boundary lines within the map are approximate and subject to change. The map is not a survey. The map is for informational purposes only regarding the EPA's response actions at the Site.

6.4 Data Review

According to the 2008 AROD, the remedy was expected to achieve the groundwater cleanup goals in five years or less. The EPA sampled the site groundwater monitoring wells (Figure 4) in November 2010, January 2012, April 2013, January 2015 and May 2016 in the former South and West Drainfields (Table 10) and from wells underlying Plant #1 (Table 11). A detailed summary of historical data from 2010 to 2016 is presented in Appendix F. The only contaminants exceeding the cleanup goals during the last five years were breakdown products of TCE, including cis12DCE and vinyl chloride. Table 10 shows that vinyl chloride is the only COC that remains above the cleanup goal downgradient of the two drainfields in 2016. The concentrations of vinyl chloride in the West Drainfield have met the cleanup goal of 1 µg/L in all wells except one, PMW-1, located immediately southwest of the drainfield with a concentration of 1.1 µg/L which is very close to meeting the cleanup goal. In the South Drainfield, vinyl chloride exhibits a general decline in all wells with only one well, RW-2 (located immediately southeast of the drainfield), exceeding the cleanup goal of 1 µg/L with a concentration of 45 µg/L. All wells further downgradient of the two wells exceeding the vinyl chloride cleanup in the West and South Drainfields are below detection or below the cleanup goal of 1 µg/L for vinyl chloride.

Table 11 shows that the concentrations of vinyl chloride and cis12DCE exhibit an overall decline over the past five years with one exception, well IW-1, located on the east side of former Plant #1. In 2010, the concentrations of vinyl chloride in IW-1 slightly exceeded the cleanup goal of 1 µg/L with a concentration of 1.1 µg/L; the next sampling event at this well occurred in 2015, where there was a significant increase to 1,100 µg/L. The May 2016 sample from IW-1 shows that the 2015 concentration was likely an anomaly as the most recent concentration of 1.6 µg/L is only slightly above the cleanup goal of 1 µg/L and is consistent with the concentration detected in 2010. Similarly, the concentration of cis12DCE was below detection in IW-1 in 2010 but increased above the cleanup goal of 70 µg/L in 2015 with a concentration of 250 µg/L. The May 2016 sample concentration of 0.31 µg/L at IW-1 is well below the cleanup goal of 70 µg/L for cis12DCE. PMW-6, located in southeast corner of Plant #1 and downgradient of IW-1, was below detection for vinyl chloride and cis12DCE demonstrating that the residual concentrations of TCE breakdown products remain localized to IW-1. The concentrations of vinyl chloride and cis12DCE remain below cleanup goals on the west side of Plant #1 based on the results of well IW-11. Additional monitoring is recommended until all wells meet the ROD cleanup goals in groundwater.

Table 10: Cis12DCE and Vinyl Chloride Groundwater Data in the Drainfields (2010-2016)

Well	Location Description	Sample Date	Vinyl chloride (Cleanup Goal=1 µg/L)	Cis12DCE (Cleanup Goal=70 µg/L)
West Drainfield				
PMW-2	Center of drainfield	November 2010	0.032	<0.50
		January 2012	--	--
		April 2013	--	--
		January 2015	<0.50	<0.50
		May 2016	<0.50	0.69
RW-1	South end of drainfield	November 2010	**3.8**	7.7
		January 2012	--	--
		April 2013	**1.3**	1.0
		January 2015	**1.4**	1.5
		May 2016	0.88	1.5

Well	Location Description	Sample Date	Vinyl chloride (Cleanup Goal=1 µg/L)	Cis12DCE (Cleanup Goal=70 µg/L)
PMW-1	Downgradient and southwest of RW-1	November 2010	**36**	38
		January 2012	**26**	31
		April 2013	**6.8**	7.2
		January 2015	**3.9**	2.2
		May 2016	**1.1**	1.2
IW-14	Downgradient and south of PMW-1	November 2010	0.94	0.20
		January 2012	--	--
		April 2013	--	--
		January 2015	<0.50	<0.50
		May 2016	<0.50	<0.50
PMW-3	Downgradient and southeast of RW-1	November 2010	**8.7**	1.3
		January 2012	**2.4**	0.46
		April 2013	**4.5**	2.7
		January 2015	0.39J	0.20
		May 2016	0.14J	<0.50
IW-12	Downgradient and southeast of PMW-3	May 2016	<0.50	<0.50
South Drainfield				
PMW-5	Center of drainfield	November 2010	0.98	0.63
		January 2012	--	--
		April 2013	--	--
		January 2015	--	--
		May 2016	0.35J	1.0
RW-2	Downgradient and southeast of drainfield	November 2010	**120**	17
		January 2012	**3.9**	2.1
		April 2013	**50**	15
		January 2015	**35**	55
		May 2016	**45**	12
IW-5	Downgradient and south of RW-2	November 2010	0.46	0.25
		January 2012	--	--
		April 2013	--	--
		January 2015	<0.50	<0.50
		May 2016	<0.50	<0.50
PMW-7	Downgradient and southeast of RW-2	November 2010	0.10	0.28
		January 2012	--	--
		April 2013	--	--
		January 2015	<0.50	0.22
		May 2016	<0.50	<0.50

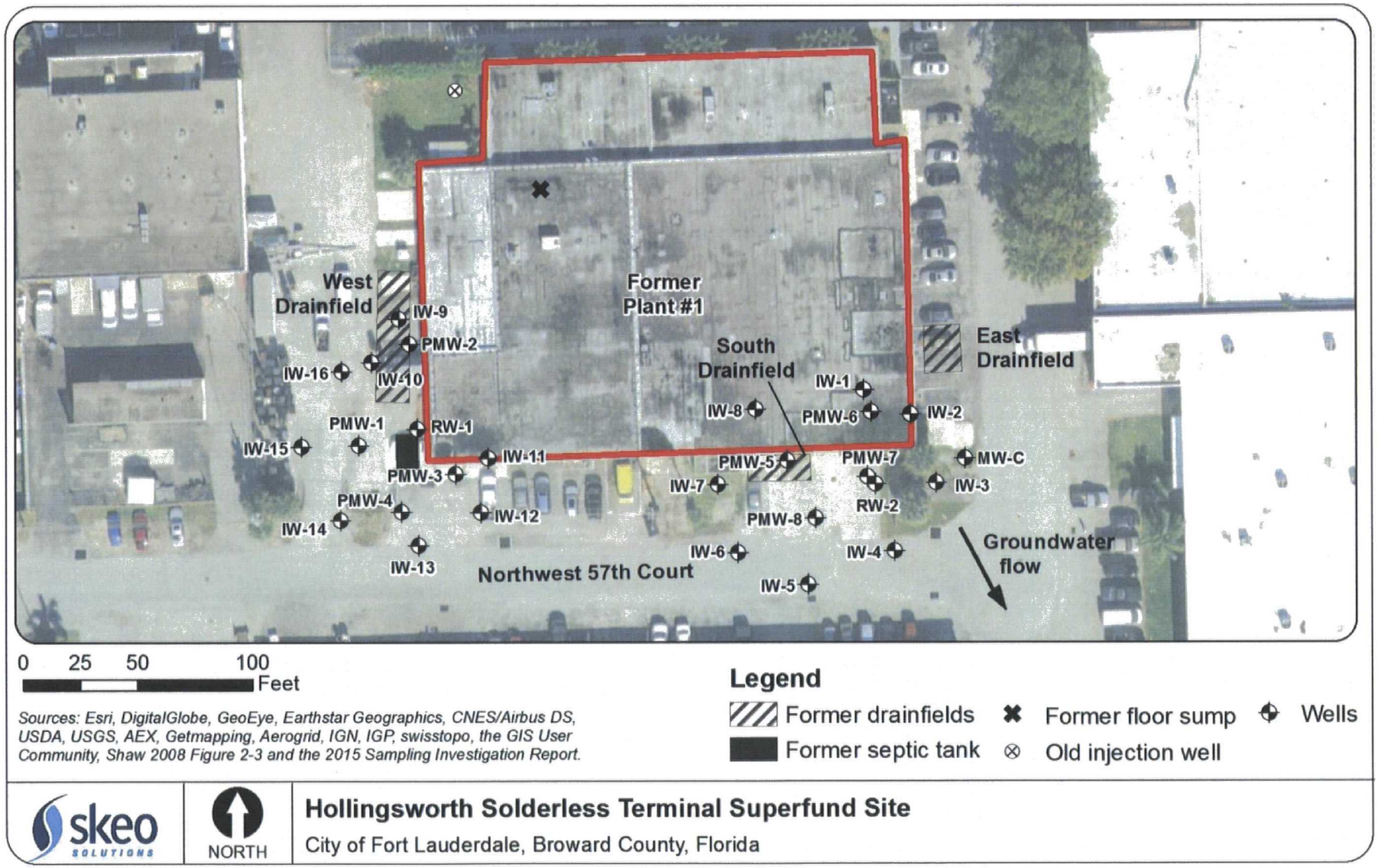
Notes:
-- well not sampled. **Bold** – concentration exceeds cleanup goal.
J – estimated value.

Table 11: Cis12DCE and Vinyl Chloride Groundwater Data Under Plant #1 (2010-2016)

Well	Location Description	Sample Date	Vinyl chloride (Cleanup Goal=1 µg/L)	Cis12DCE (Cleanup Goal=70 µg/L)
Plant #1 West Side				
IW-11	Southwest corner of building	November 2010	0.24	0.39
		January 2012	--	--
		April 2013	--	--
		January 2015	0.74	<0.50
		May 2016	<0.50	<0.50
Plant #1 East Side				
IW-1	Southeast corner of building	November 2010	**1.1**	<0.50
		January 2012	--	--
		April 2013	--	--
		January 2015	**1,100**	**250**
		May 2016	**1.3/1.6 (duplicate)**	0.26J/0.31J (duplicate)
PMW-6	Downgradient of IW-1	November 2010	0.11	<0.50
		January 2012	--	--
		April 2013	--	--
		January 2015	--	--
		May 2016	0.57	<0.50

Notes:
-- well not sampled. **Bold** – concentration exceeds cleanup goal.

Figure 4: Long-term Monitoring Well Locations and Injection Wells



Disclaimer: This map and any boundary lines within the map are approximate and subject to change. The map is not a survey. The map is for informational purposes only regarding the EPA's response actions at the Site.

6.5 Site Inspection

Site inspection participants met on February 23, 2016, at the Site. The site inspection checklist is located in Appendix D; site inspection photographs are in Appendix E. Participants included Galo Jackson (EPA), L'Tonya Spencer (EPA), Sam Hankinson (FDEP), John Moore (Broward County), Sarah Alfano and Claire Marcussen (Skeo).

The inspection began at the former Plant #1 building, which currently houses several tenants, including a uniform distribution center, a law firm, an international car dealership, a custom woodworking company and a moving company. Participants observed the former West Drainfield area where soil excavation and septic tank removal had occurred; the area is currently covered by an asphalt pad. Participants also viewed a number of injection wells and monitoring wells, some of which were secured with locks; however, several wells were damaged or not secured. The location of the former injection well was observed outside of the northwest corner of former Plant #1. Participants inspected the former South Drainfield and East Drainfield, which are now covered by asphalt pads, and injection wells and monitoring wells in the area. Several wells were not secured. Participants then entered the east side of former Plant #1 and observed several injection wells, which were all secured. Finally, participants observed the former Plant #2 building, which is used for administrative purposes.

Skeo visited the site repository at the Broward County Public Library; all site decision documents were located in hard copy in the library. However, the 2011 FYR was not located in the available documentation.

6.6 Interviews

The FYR process included interviews with parties affected by the Site and regulatory agencies involved in Site activities or aware of the Site. The purpose was to document the perceived status of the Site and any perceived problems or successes with the phases of the remedy implemented to date. All of the interviews took place via email. The interviews are summarized below. Appendix C provides the complete interviews.

John Moore: John Moore is an engineer representing Broward County's Environmental Protection and Growth Management Department. He is aware of the former environmental issues at the Site and feels well-informed regarding site activities, given that the EPA has been very cooperative and responsive to all requests for status updates. Mr. Moore also believes that the EPA has kept surrounding neighbors and involved parties informed of site activities and that the best way to continue to do so is for the EPA to keep responding to requests for status updates. He is not aware of any problems or unusual activities at the Site and is not aware of any changes to local laws that would affect the Site.

Galo Jackson: Galo Jackson is the EPA RPM and believes that the groundwater contaminant concentrations have dramatically decreased following remedy implementation. Mr. Jackson indicated that low residual concentrations of TCE degradation products currently exist at the Site and it will be a challenge to meet the vinyl chloride cleanup goal of 1 microgram per liter (µg/L). Although all but three wells currently meet this goal Mr. Jackson is comfortable with the institutional controls at the Site. He has not received any related complaints from the local community other than nearby owners expressing the desire to have the Site deleted from the NPL because the borrowing costs to these businesses are greater due to the proximity of the Site to the adjacent business owners.

Kelsey Helton: Kelsey Helton is the FDEP Project Manager and provided comments on the Site during the FYR process but did not provide an interview form. Ms. Helton believes the soil remedy remains protective and that the groundwater remedy is protective in the short-term because controls are in place the prevent exposure. Ms. Helton recommends that the scope and frequency of future groundwater monitoring be clearly documented and a regularly scheduled program of monitoring be implemented.

7.0 Technical Assessment

7.1 Question A: Is the remedy functioning as intended by the decision documents?

The soil remedy is functioning as intended by the original ROD, as modified by the ESD and ultimately the 2008 AROD. Soil contamination has been removed to levels that would not result in leaching to groundwater above cleanup goals. The groundwater remedy is functioning but not within the timeframe expected. The 2008 AROD EPA estimated that groundwater cleanup goals would be met in 5 years or less; however, despite a continued decline in concentrations over the last 5 years following the final in-situ injection of substrate in 2011, three wells exceed the cleanup goal of 1 µg/L for vinyl chloride, a TCE breakdown product. The three wells include IW-1 (1.6 µg/L) located under the eastern side of Plant #1, PMW-1 (1.1 µg/L) located southwest of the West Drainfield and RW-2 (45 µg/L) located southeast of the South Drainfield. These exceedances appear to be localized as the concentrations of vinyl chloride located immediately downgradient of these three wells are below detection or below the cleanup goal of 1 µg/L for vinyl chloride. Based on the results, it is recommended that groundwater monitoring continue until cleanup goals have been met in all wells.

The Site is located within a Florida Groundwater Delineation Area, which restricts construction of new wells within the designated area. The old injection well was properly decommissioned and abandoned by the EPA in October 2006. In addition, the City of Fort Lauderdale's Prospect Well Field, which is located approximately 2 miles west of the Site and supplies water to the city, has not been impacted by the Site. During the February site inspection, several wells were not secured as it appeared the tops of the well casings may have been damaged. All site wells should be secured, since many are located in areas accessible by the general public.

7.2 Question B: Are the exposure assumptions, toxicity data, cleanup levels and remedial action objectives (RAOs) used at the time of remedy selection still valid?

The toxicity values for several COCs have changed and in 2014 the EPA has updated default exposure assumptions, however, despite these changes, cleanup levels and RAOs remain valid. The 1986 ROD cleanup goals for soil in the East Drainfield were soil concentrations that did not result in exceedance of the EPA's Extraction Procedure Toxicity Characteristics (EP) toxicity test results for copper, lead and nickel, while a level of 1 mg/kg was established for total VOCs. The EP toxicity criteria have not changed since the 1986 ROD.

There is no total VOC SCTL; however, in the 2001 ESD, the EPA developed chemical-specific soil cleanup goals for three VOCs (trans12DCE, TCE and vinyl chloride) based on leaching to groundwater. This FYR's screening-level risk evaluation of the 2001 soil cleanup goals demonstrates that the goals remain valid because the risk associated with the goals is below 1×10^{-6}, the lower bound of the EPA's risk management range of 1×10^{-6} to 1×10^{-4}, and below the EPA's target noncancer hazard quotient (HQ) of 1.0 for residential exposure. The risks are also below FDEP's target level of 1×10^{-6} (Appendix G). In addition, the groundwater cleanup levels remain valid since the values, which were ARARs, have

not changed since the 2008 AROD and the screening-level health evaluation demonstrated the values remain valid.

VOCs are present in groundwater underlying the Site. Therefore, vapor intrusion exposure is a potential completed exposure pathway for Plant #1, where residual groundwater contamination remains. Soil vapor and indoor air samples have not been collected near Plant #1 therefore the EPA conducted a screening-level vapor intrusion evaluation as part of this FYR using the most recent groundwater results to determine if this potential exposure pathway requires more in-depth analysis. The only COC detected in the May 2016 results above ROD cleanup goals was vinyl chloride. The maximum concentration detected immediately southeast of Plant #1 in RW-2 was used in the EPA's Vapor Intrusion Screening Level Calculator (Appendix G). The screening-level vapor intrusion risk evaluation used default commercial/industrial land use exposure assumptions and indicates that the cancer risks associated with RW-2 are within EPA's risk management range of 1×10^{-6} to 1×10^{-4} and below the noncancer HQ of 1.0. These results indicate the vapor intrusion exposure pathway does not require further evaluation.

7.3 Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

No other information has come to light that could call into question the protectiveness of the remedy.

7.4 Technical Assessment Summary

The soil remedy is functioning as intended by the decision documents. The groundwater remedy is functioning but not within the estimated timeframe specified in the 2008 AROD. According to the 2008 AROD, groundwater cleanup goals would be met in 5 years or less; however, despite a continued decline in concentrations over the last 5 years following the final in-situ injection of substrate in 2011, three wells still exceed the cleanup goal of 1 µg/L for vinyl chloride, a TCE breakdown product. A screening-level vapor intrusion risk evaluation was conducted because this exposure pathway had not been evaluated in the past. The results indicate that this exposure pathway does not require further evaluation as the concentrations are within the EPA risk management range and below the noncancer HQ of 1.0. In addition, groundwater is not currently used at the Site and restrictions are in place to prevent installation of potable wells. However, to ensure long-term protectiveness of the remedy several monitoring wells should be repaired and secured.

8.0 Issues, Recommendations and Follow-up Actions

Table 12: Issue and Recommendation Identified in the Five-Year Review

OU(s): 1	**Issue Category:** Operations and Maintenance			
	Issue: Several monitoring wells are damaged and not secure and not all wells have been monitored on a regular basis.			
	Recommendation: Repair all wells that were damaged and not secured and ensure all relevant wells are monitored on a regular basis.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Implementing Party**	**Oversight Party**	**Milestone Date**
No	Yes	EPA	EPA/State	9/7/2017

The following additional items, though not expected to affect protectiveness, warrant additional follow-up:

- Include copies of this FYR report in the Site repository.
- Ensure all monitoring wells are properly abandoned once groundwater cleanup goals have been achieved and documented in accordance with EPA guidance.
- Evaluate the need to prepare an O&M Plan or a Quality Assurance Project Plan to outline the data necessary to be collected to close-out the Site under CERCLA.

9.0 Protectiveness Statement

Table 13: Protectiveness Statement

Sitewide Protectiveness Statement
Protectiveness Determination: Short-term Protective
Protectiveness Statement: The remedy currently protects human health and the environment because contaminated soils have been removed such that no land use restrictions are needed, groundwater contamination remains on site and institutional controls are in place that restrict the use of groundwater at the Site. In order for the remedy to be protective in the long term, site monitoring wells need to be repaired and monitored on a regular basis.

10.0 Next Review

The next FYR will be due within five years of the signature/approval date of this FYR.

Appendix A: List of Documents Reviewed

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Information System Site Information accessed online:
http://cumulis.epa.gov/supercpad/cursites/csitinfo.cfm?id=0400548

EPA Record of Decision: Hollingsworth Solderless Terminal Company. EPA ID: FLD004119681. Fort Lauderdale, FL. April 10, 1986.

EPA Explanation of Significant Differences: Hollingsworth Solderless Terminal Company Superfund Site. August 6, 2001.

EPA Amended Record of Decision: Hollingsworth Solderless Terminal Company. EPA ID: FLD004119681. Fort Lauderdale, FL. November 24, 2008.

EPA Sampling Investigation Report for the Hollingsworth Solderless Terminal Company Superfund Site. Prepared by EPA's Science and Ecosystem Support Division. February 11, 2015.

EPA Sampling Investigation Report for the Hollingsworth Solderless Terminal Company Superfund Site. Prepared by EPA's Science and Ecosystem Support Division, Project Identification Number: 16-0363. July 7, 2016.

EPA Quality Assurance Project Plan for the Hollingsworth Solderless Terminal Company Superfund Site. Prepared by EPA's Science and Ecosystem Support Division. January 5, 2015.

Operations and Maintenance Plan. Ebasco Environmental. September 22, 1992.

Remedial Action Report for the Hollingsworth Solderless Terminal Company Site. Ebasco Environmental. May 28, 1993.

Remedial Action Report for the Hollingsworth Solderless Terminal Company Site. September 2002.

Fourth Five-Year Review Report for Hollingsworth Solderless Terminal Company Superfund Site, Fort Lauderdale, Broward County, Florida. Prepared by EPA Region 4. September 7, 2011.

Appendix B: Press Notice

U. S. ENVIRONMENTAL PROTECTION AGENCY
REGION 4 ANNOUNCES THE START OF FIVE YEAR REVIEW FOR THE HOLLINGSWORTH SOLDERLESS TERMINAL COMPANY

Section 121 of CERCLA, as amended by SARA, requires that remedial actions of hazardous substances be subject to a five-year review to ensure that the selected remedy continues to protect human health and the environment.

Site Background: The Hollingsworth Site is located at 700 NW 57th Place in the City of Fort Lauderdale, Broward County, Florida. The Site consists of approximately 3.5 acres and is occupied by two buildings separated by NW 57th Place. The Site is bounded by asphalt and dirt alleyways and a mixture of commercial and light industrial properties. The site is located within the 100 year flood plain and is topographically flat.

From 1968 until 1982, the Site manufactured solderless electrical terminals, consisting of a conductive metal portion and a plastic sleeve. The manufacturing process included heat treatment in molten salt baths, de-greasing and electroplating. For approximately eight years, the company disposed of wash water and process wastewater contaminated with trichloroethene and heavy metals into drain fields and an injection well located onsite, resulting in contamination of soil and groundwater.

Cleanup Action: The Record of Decision (ROD) was signed in 1986. The ROD identified the selected remedy to be as follows:

- Proper abandonment of the old injection well and all other PVC wells on site;
- Treatment of VOC contaminated soil on site;
- Treatment of VOC contaminated groundwater on site; and
- Injection of treated groundwater near the site.

In 2001, additional excavation of two additional areas took place. In April 2011, a small-scale bioremediation remedy was implemented. Currently, only very low levels contaminants remain.

Contact Information: If you have any questions, contact information is provided below:

Galo Jackson, Project Manager
404-562-8937 / 1-800-435-9234 (Toll Free)

L'Tonya Spencer,
Community Involvement Coordinator
404-562-8463 / 1-877-718-3752 (Toll Free)

U.S. EPA Region 4 Mailing Address
Waste Division (Mailcode: 4WD-SRTSB)
61 Forsyth Street
Atlanta, Georgia 30303
2/18/2016

Local Document Repository
Broward County Main Library
100 South Andrews Avenue
Ft. Lauderdale, FL 33301

Appendix C: Interview Forms

Hollingsworth Solderless Terminal Superfund Site **Five-Year Review Interview Form**

Site Name: Hollingsworth Solderless Terminal **EPA ID No.:** FLD004119681

Subject Name: John Moore **Affiliation:** Broward County Environmental Protection and Growth Management

Time: _____ **Date:** 2016

Interview Location: _____

Interview Format (circle one): **In Person** **Phone** **Mail** **Other: Email**

Interview Category: **Local Government**

1. Are you aware of the former environmental issues at the Site and the cleanup activities that have taken place to date? *Yes.*

2. Do you feel well-informed regarding the Site's activities and remedial progress? If not, how might EPA convey site-related information in the future? *Yes. The EPA has been very cooperative and responsive to all requests for status updates.*

3. Have there been any problems with unusual or unexpected activities at the Site, such as emergency response, vandalism or trespassing? *Not to my knowledge.*

4. Are you aware of any changes to state laws or local regulations that might affect the protectiveness of the Site's remedy? *No.*

5. Are you aware of any changes in projected land use(s) at the Site? *No.*

6. Has EPA kept involved parties and surrounding neighbors informed of activities at the Site? *Yes, to the best of my knowledge.* How can EPA best provide site-related information in the future? *Continue to respond to requests for status updates as in the past.*

7. Do you have any comments, suggestions or recommendations regarding the project? *Not at this time.*

Hollingsworth Solderless Terminal Superfund Site **Five-Year Review Interview Form**

Site Name: Hollingsworth Solderless Terminal **EPA ID No.:** FLD004119681
Interviewer Name: _____ **Affiliation:** _____
Subject Name: Galo Jackson **Affiliation:** EPA Region 4
Subject Contact Information: (404) 562-8937
Time: 10:00 AM **Date:** 4/21/2016
Interview Location: _____

Interview Format (circle one): **In Person** **Phone** **Mail** **Other: Email**

Interview Category: **EPA Remedial Project Manager**

1. What is your overall impression of the project, including cleanup, maintenance and reuse activities (as appropriate)? *Since the cleanup started at the Hollingsworth Solderless site, contaminant concentrations in the groundwater have been brought down dramatically. Initially, the groundwater had concentrations of about 226,000 parts per billion total volatile organic compounds, principally trichloroethylene (TCE), before the groundwater recovery and treatment system operated. Currently, there exist generally very low-to-trace concentrations of the degradation products cis-1,2-dichlorethylene (cis-2DCE) and vinyl chlorine (VC), which are degradation products of TCE. No TCE has been detected for some time. The current challenge is to achieve and maintain the ROD's remedial goals for cis-2DCE of 70 parts per billion (ppb) and 1.0 ppb, respectively. It should be noted that Broward County has documented background low (single digit) level concentrations of vinyl chloride. See the Metcalf and Eddy, Inc. October 1999 report.*

   With some periods during which the Site's buildings have been vacant due to reasons unrelated to the cleanup, the Site has been in continuous use.

2. What have been the effects of this Site on the surrounding community, if any? *Over the past year, owners of nearby properties have expressed the desire to have the Site deleted for the National Priorities List, because the borrowing costs to these businesses are greater due to the proximity of the Hollingsworth Solderless Terminal site.*

3. Are you aware of any complaints or inquiries regarding site-related environmental issues or remedial activities since the implementation of the cleanup? *The Region has not received any complaints since the last five-year review.*

4. What is your assessment of the current performance of the remedy in place at the Site? *As mentioned in the response to the first question, the challenge is to meet the cleanup goals of 1 part per billion high for vinyl chloride. Although most wells associated with the Site currently are meeting the Florida MCL, on the average about three of them exceed the vinyl chloride goal.*

5. Are you comfortable with the status of the institutional controls at the Site? If not, what are the associated outstanding issues? *The only institutional control in effect, aside from Broward County Ordinance, is that offered by Chapter 62-524 of the Florida Administrative Code, an institutional control in the form of restrictions on the installation of new potable*

water wells. Rules 62-524.550, 62-524-600, 62-524-650 and 62-524-700 impose restrictions on well construction, water quality testing and permitting of groundwater wells located in delineated areas.

6. Are you aware of any community concerns regarding the Site or the operation and management of its remedy? If so, please provide details. *No*

7. Do you have any comments, suggestions or recommendations regarding the management or operation of the Site's remedy? *Not applicable.*

Appendix D: Site Inspection Checklist

FIVE-YEAR REVIEW SITE INSPECTION CHECKLIST

I. SITE INFORMATION

Site Name: Hollingsworth Solderless Terminal Superfund Site	**Date of Inspection:** 02/23/2016
Location and Region: Fort Lauderdale, FL/Region 4	**EPA ID:** FLD004119681
Agency, Office or Company Leading the Five-Year Review: EPA Region 4	**Weather/Temperature:** Cloudy, 80s

Remedy Includes: (Check all that apply)

- ☐ Landfill cover/containment
- ☐ Access controls
- ☒ Institutional controls
- ☒ Ground water pump and treatment
- ☐ Surface water collection and treatment
- ☒ Other: Soil excavation, SVE, and in situ bioremediation
- ☐ Monitored natural attenuation
- ☐ Groundwater containment
- ☐ Vertical barrier walls

Attachments: ☒ Inspection team roster attached ☐ Site map attached

II. INTERVIEWS (check all that apply)

1. **O&M Site Manager** Galo Jackson (Name) EPA RPM (Title) 4/21/2016 (Date)
   Interviewed ☐ at site ☐ at office ☐ by phone Phone: 404-562-8937
   Problems, suggestions ☐ Report attached: _____

2. **O&M Staff** _____ (Name) _____ (Title) _____ (Date)
   Interviewed ☐ at site ☐ at office ☐ by phone Phone: _____
   Problems/suggestions ☐ Report attached: _____

3. **Local Regulatory Authorities and Response Agencies** (i.e., state and tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices). Fill in all that apply.

   Agency EPA
   Contact Galo Jackson (Name) | EPA RPM (Title) | 4/21/2016 (Date) | 404-562-8937 (Phone No.)
   Problems/suggestions ☐ Report attached: _____

   Agency FDEP
   Contact Kelsey Helton (Name) | Project Manager (Title) | 07/22/2016 (Date) | 850-245-8969 (Phone No.)
   Problems/suggestions ☐ Report attached: No report attached, comments provided without interview form.

   Agency Broward County
   Contact John Moore (Name) | Engineer (Title) | 4/1/2016 (Date) | 954-519-0307 (Phone No.)
   Problems/suggestions ☐ Report attached: _____

   Agency _____
   Contact _____ (Name) | _____ (Title) | _____ (Date) | _____ (Phone No.)
   Problems/suggestions ☐ Report attached: _____

   Agency _____

	Contact Name	Title	Date	Phone No.	
	Problems/suggestions ☐ Report attached: _____				
4.	**Other Interviews** (optional) ☒ Report attached: _____				
	III. ON-SITE DOCUMENTS AND RECORDS VERIFIED (check all that apply)				
1.	**O&M Documents**				
	☒ O&M manual	☒ Readily available	☒ Up to date	☐ N/A	
	☐ As-built drawings	☐ Readily available	☐ Up to date	☒ N/A	
	☐ Maintenance logs	☐ Readily available	☐ Up to date	☒ N/A	
	Remarks: The groundwater pump and treat system was dismantled in 1994.				
2.	**Site-Specific Health and Safety Plan**	☐ Readily available	☒ Up to date	☐ N/A	
	☐ Contingency plan/emergency response plan	☐ Readily available	☒ Up to date	☐ N/A	
	Remarks: _____				
3.	**O&M and OSHA Training Records**	☐ Readily available	☒ Up to date	☐ N/A	
	Remarks: _____				
4.	**Permits and Service Agreements**				
	☐ Air discharge permit	☐ Readily available	☐ Up to date	☒ N/A	
	☐ Effluent discharge	☐ Readily available	☐ Up to date	☒ N/A	
	☐ Waste disposal, POTW	☐ Readily available	☐ Up to date	☒ N/A	
	☐ Other permits: _____	☐ Readily available	☐ Up to date	☒ N/A	
	Remarks: _____				
5.	**Gas Generation Records**	☐ Readily available	☐ Up to date	☒ N/A	
	Remarks: _____				
6.	**Settlement Monument Records**	☐ Readily available	☐ Up to date	☒ N/A	
	Remarks: _____				
7.	**Ground Water Monitoring Records**	☒ Readily available	☒ Up to date	☐ N/A	
	Remarks: _____				
8.	**Leachate Extraction Records**	☐ Readily available	☐ Up to date	☒ N/A	
	Remarks: _____				
9.	**Discharge Compliance Records**				
	☐ Air	☐ Readily available	☐ Up to date	☒ N/A	
	☐ Water (effluent)	☐ Readily available	☐ Up to date	☒ N/A	
	Remarks: _____				
10.	**Daily Access/Security Logs**	☐ Readily available	☐ Up to date	☒ N/A	
	Remarks: _____				
	IV. O&M COSTS				

1. **O&M Organization**

☐ State in-house ☐ Contractor for state

☐ PRP in-house ☐ Contractor for PRP

☐ Federal facility in-house ☐ Contractor for Federal facility

☒ EPA/SESD

2. **O&M Cost Records**

☒ Readily available ☒ Up to date

☐ Funding mechanism/agreement in place ☐ Unavailable

Original O&M cost estimate: _____ ☒ Breakdown attached

Total annual cost by year for review period if available

From: 1/1/2011 Date	To: 12/31/2011 Date	$ 0 Total cost	☐ Breakdown attached
From: 1/1/2012 Date	To: 12/31/2012 Date	$5,988 Total cost	☐ Breakdown attached
From: 1/1/2013 Date	To: 12/31/2013 Date	$7,475 Total cost	☐ Breakdown attached
From: 1/1/2014 Date	To: 12/31/2014 Date	$ 0 Total cost	☐ Breakdown attached
From: 1/1/2015 Date	To: 12/31/2015 Date	$28,000 Total cost	☐ Breakdown attached

3. **Unanticipated or Unusually High O&M Costs during Review Period**

Describe costs and reasons: The higher cost for 2015 is due to several wells still exceeding cleanup goals requiring additional post-injection monitoring for the Site.

V. ACCESS AND INSTITUTIONAL CONTROLS ☒ Applicable ☐ N/A

A. Fencing

1. **Fencing Damaged** ☐ Location shown on site map ☐ Gates secured ☒ N/A

Remarks: _____

B. Other Access Restrictions

1. **Signs and Other Security Measures** ☐ Location shown on site map ☒ N/A

Remarks: _____

C. Institutional Controls (ICs)

1. **Implementation and Enforcement**

Site conditions imply ICs not properly implemented ☐ Yes ☒ No ☐ N/A

Site conditions imply ICs not being fully enforced ☐ Yes ☒ No ☐ N/A

Type of monitoring (e.g., self-reporting, drive by): _____

Frequency: _____

Responsible party/agency: _____

Contact	_____	_____	_____	_____
	Name	Title	Date	Phone no.

Reporting is up to date ☐ Yes ☐ No ☐ N/A

Reports are verified by the lead agency ☐ Yes ☐ No ☐ N/A

Specific requirements in deed or decision documents have been met ☐ Yes ☐ No ☐ N/A

Violations have been reported ☐ Yes ☐ No ☐ N/A

Other problems or suggestions: ☐ Report attached

2. **Adequacy** ☒ ICs are adequate ☐ ICs are inadequate ☐ N/A

Remarks: On site groundwater remains onsite and is not used; Site located in a FDEP Groundwater Delineation Area.

D. General

1. **Vandalism/Trespassing** ☐ Location shown on site map ☒ No vandalism evident

Remarks: _____

2. **Land Use Changes On Site** ☒ N/A

Remarks: _____

3. **Land Use Changes Off Site** ☒ N/A

Remarks: _____

VI. GENERAL SITE CONDITIONS

A. Roads ☒ Applicable ☐ N/A

1. **Roads Damaged** ☐ Location shown on site map ☒ Roads adequate ☐ N/A

Remarks: _____

B. Other Site Conditions

Remarks: _____

VII. LANDFILL COVERS ☐ Applicable ☒ N/A

A. Landfill Surface

1. **Settlement** (low spots) ☐ Location shown on site map ☐ Settlement not evident

Arial extent: _____ Depth: _____

Remarks: _____

2. **Cracks** ☐ Location shown on site map ☐ Cracking not evident

Lengths: _____ Widths: _____ Depths: _____

Remarks: _____

3.	**Erosion**	☐ Location shown on site map	☐ Erosion not evident
	Arial extent: _____		Depth: _____
	Remarks: _____		
4.	**Holes**	☐ Location shown on site map	☐ Holes not evident
	Arial extent: _____		Depth: _____
	Remarks: _____		
5.	**Vegetative Cover**	☐ Grass	☐ Cover properly established
	☐ No signs of stress	☐ Trees/shrubs (indicate size and locations on a diagram)	
	Remarks: _____		
6.	**Alternative Cover** (e.g., armored rock, concrete)		☐ N/A
	Remarks: _____		
7.	**Bulges**	☐ Location shown on site map	☐ Bulges not evident
	Arial extent: _____		Height: _____
	Remarks: _____		
8.	**Wet Areas/Water Damage**	☐ Wet areas/water damage not evident	
	☐ Wet areas	☐ Location shown on site map	Arial extent: _____
	☐ Ponding	☐ Location shown on site map	Arial extent: _____
	☐ Seeps	☐ Location shown on site map	Arial extent: _____
	☐ Soft subgrade	☐ Location shown on site map	Arial extent: _____
	Remarks: _____		
9.	**Slope Instability**	☐ Slides	☐ Location shown on site map
	☐ No evidence of slope instability		
	Arial extent: _____		
	Remarks: _____		
B. Benches		☐ Applicable	☐ N/A
	(Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)		
1.	**Flows Bypass Bench**	☐ Location shown on site map	☐ N/A or okay
	Remarks: _____		
2.	**Bench Breached**	☐ Location shown on site map	☐ N/A or okay
	Remarks: _____		
3.	**Bench Overtopped**	☐ Location shown on site map	☐ N/A or okay
	Remarks: _____		
C. Letdown Channels		☐ Applicable	☐ N/A
	(Channel lined with erosion control mats, riprap, grout bags or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill		

cover without creating erosion gullies.)

1. **Settlement** (Low spots) ☐ Location shown on site map ☐ No evidence of settlement
   Arial extent: _____ Depth: _____
   Remarks: _____

2. **Material Degradation** ☐ Location shown on site map ☐ No evidence of degradation
   Material type:_____ Arial extent: _____
   Remarks: _____

3. **Erosion** ☐ Location shown on site map ☐ No evidence of erosion
   Arial extent: _____ Depth: _____
   Remarks: _____

4. **Undercutting** ☐ Location shown on site map ☐ No evidence of undercutting
   Arial extent: _____ Depth: _____
   Remarks: _____

5. **Obstructions** Type: _____ ☐ No obstructions
   ☐ Location shown on site map Arial extent: _____
   Size: _____
   Remarks: _____

6. **Excessive Vegetative Growth** Type: _____
   ☐ No evidence of excessive growth
   ☐ Vegetation in channels does not obstruct flow
   ☐ Location shown on site map Arial extent: _____
   Remarks: _____

D. Cover Penetrations ☐ Applicable ☐ N/A

1. **Gas Vents** ☐ Active ☐ Passive
   ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
   ☐ Evidence of leakage at penetration ☐ Needs maintenance ☐ N/A
   Remarks: _____

2. **Gas Monitoring Probes**
   ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
   ☐ Evidence of leakage at penetration ☐ Needs maintenance ☐ N/A
   Remarks: _____

3. **Monitoring Wells** (within surface area of landfill)
   ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
   ☐ Evidence of leakage at penetration ☐ Needs maintenance ☐ N/A
   Remarks: _____

4. **Extraction Wells Leachate**

☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs maintenance ☐ N/A
Remarks: _____

5. **Settlement Monuments** ☐ Located ☐ Routinely surveyed ☐ N/A
Remarks: _____

E. Gas Collection and Treatment ☐ Applicable ☐ N/A

1. **Gas Treatment Facilities**
☐ Flaring ☐ Thermal destruction ☐ Collection for reuse
☐ Good condition ☐ Needs maintenance
Remarks: _____

2. **Gas Collection Wells, Manifolds and Piping**
☐ Good condition ☐ Needs maintenance
Remarks: _____

3. **Gas Monitoring Facilities** (e.g., gas monitoring of adjacent homes or buildings)
☐ Good condition ☐ Needs maintenance ☐ N/A
Remarks: _____

F. Cover Drainage Layer ☐ Applicable ☐ N/A

1. **Outlet Pipes Inspected** ☐ Functioning ☐ N/A
Remarks: _____

2. **Outlet Rock Inspected** ☐ Functioning ☐ N/A
Remarks: _____

G. Detention/Sedimentation Ponds ☐ Applicable ☐ N/A

1. **Siltation** Area extent: _____ Depth: _____ ☐ N/A
☐ Siltation not evident
Remarks: _____

2. **Erosion** Area extent: _____ Depth: _____
☐ Erosion not evident
Remarks: _____

3. **Outlet Works** ☐ Functioning ☐ N/A
Remarks: _____

4. **Dam** ☐ Functioning ☐ N/A
Remarks: _____

H. Retaining Walls ☐ Applicable ☒ N/A

1. **Deformations** ☐ Location shown on site map ☐ Deformation not evident
Horizontal displacement: _____ Vertical displacement: _____
Rotational displacement: _____

Remarks: _____

2. **Degradation** ☐ Location shown on site map ☐ Degradation not evident

Remarks: _____

I. Perimeter Ditches/Off-Site Discharge ☐ Applicable ☒ N/A

1. **Siltation** ☐ Location shown on site map ☐ Siltation not evident

Area extent: _____ Depth: _____

Remarks: _____

2. **Vegetative Growth** ☐ Location shown on site map ☐ N/A

☐ Vegetation does not impede flow

Area extent: _____ Type: _____

Remarks: _____

3. **Erosion** ☐ Location shown on site map ☐ Erosion not evident

Area extent: _____ Depth: _____

Remarks: _____

4. **Discharge Structure** ☐ Functioning ☐ N/A

Remarks: _____

VIII. VERTICAL BARRIER WALLS ☐ Applicable ☒ N/A

1. **Settlement** ☐ Location shown on site map ☐ Settlement not evident

Area extent: _____ Depth: _____

Remarks: _____

2. **Performance Monitoring** Type of monitoring: _____

☐ Performance not monitored

Frequency: _____ ☐ Evidence of breaching

Head differential: _____

Remarks: _____

IX. GROUND WATER/SURFACE WATER REMEDIES ☒ Applicable ☐ N/A

A. Ground Water Extraction Wells, Pumps and Pipelines ☐ Applicable ☒ N/A

1. **Pumps, Wellhead Plumbing and Electrical**

☐ Good condition ☐ All required wells properly operating ☐ Needs maintenance ☒ N/A

Remarks: System was dismantled in 1994.

2. **Extraction System Pipelines, Valves, Valve Boxes and Other Appurtenances**

☐ Good condition ☐ Needs maintenance

Remarks: _____

3. **Spare Parts and Equipment**

☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided

Remarks: _____

B. Surface Water Collection Structures, Pumps and Pipelines ☐ Applicable ☒ N/A

1. **Collection Structures, Pumps and Electrical**

☐ Good condition ☐ Needs maintenance

Remarks: _____

2. **Surface Water Collection System Pipelines, Valves, Valve Boxes and Other Appurtenances**

☐ Good condition ☐ Needs maintenance

Remarks: _____

3. **Spare Parts and Equipment**

☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided

Remarks: _____

C. Treatment System ☒ Applicable ☐ N/A

1. **Treatment Train** (check components that apply)

☐ Metals removal ☐ Oil/water separation ☒ Bioremediation

☐ Air stripping ☐ Carbon adsorbers

☐ Filters: _____

☐ Additive (e.g., chelation agent, flocculent): _____

☐ Others: _____

☐ Good condition ☐ Needs maintenance

☐ Sampling ports properly marked and functional

☐ Sampling/maintenance log displayed and up to date

☐ Equipment properly identified

☐ Quantity of ground water treated annually: _____

☐ Quantity of surface water treated annually: _____

Remarks: _____

2. **Electrical Enclosures and Panels** (properly rated and functional)

☒ N/A ☐ Good condition ☐ Needs maintenance

Remarks: _____

3. **Tanks, Vaults, Storage Vessels**

☒ N/A ☐ Good condition ☐ Proper secondary containment ☐ Needs maintenance

Remarks: _____

4. **Discharge Structure and Appurtenances**

☒ N/A ☐ Good condition ☐ Needs maintenance

Remarks: _____

5. **Treatment Building(s)**

☒ N/A ☐ Good condition (esp. roof and doorways) ☐ Needs repair

☐ Chemicals and equipment properly stored

Remarks: _____

6. **Monitoring Wells** (pump and treatment remedy)

☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition

☐ All required wells located ☒ Needs maintenance ☐ N/A

Remarks: Several wells were not secured with locks as they appeared damaged.

D. Monitoring Data

1. **Monitoring Data**

☒ Is routinely submitted on time ☒ Is of acceptable quality

2. **Monitoring Data Suggests:**

☒ Groundwater plume is effectively contained ☐ Contaminant concentrations are declining

E. Monitored Natural Attenuation

1. **Monitoring Wells** (natural attenuation remedy)

☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition

☐ All required wells located ☐ Needs maintenance ☒ N/A

Remarks: _____

X. OTHER REMEDIES

If there are remedies applied at the site and not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.

XI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is designed to accomplish (e.g., to contain contaminant plume, minimize infiltration and gas emissions).

The remedy was designed to prevent migration of contaminated groundwater into the Biscayne aquifer and to remove the sources of contamination from overlying soil and drainfields. Groundwater contaminant concentrations appeared to be declining across the Site until January 2015 when vinyl chloride and cis-2DCE concentrations were observed significantly above cleanup goals on the west side of former Plant #1 in the vicinity of IW-1 and RW-2. The EPA resampled these wells in May 2016. The May 2016 samples showed that the 2015 concentrations were likely anomalies for vinyl chloride and cis-2DCE. The most recent concentrations of vinyl chloride were only slightly above the cleanup goal of 1 µg/L and were consistent with the concentrations detected in 2010. Similarly, the May 2016 sample concentrations for cis-2DCE were below the cleanup goal of 70 µg/L. Wells downgradient of IW-1 and RW-2 showed concentrations of vinyl chloride and cis-2DCE below cleanup goals.

B. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

Several wells may have been damaged from traffic where top of casings were damaged and locks broken.

C. Early Indicators of Potential Remedy Problems

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs that suggest that the protectiveness of the remedy may be compromised in the future.

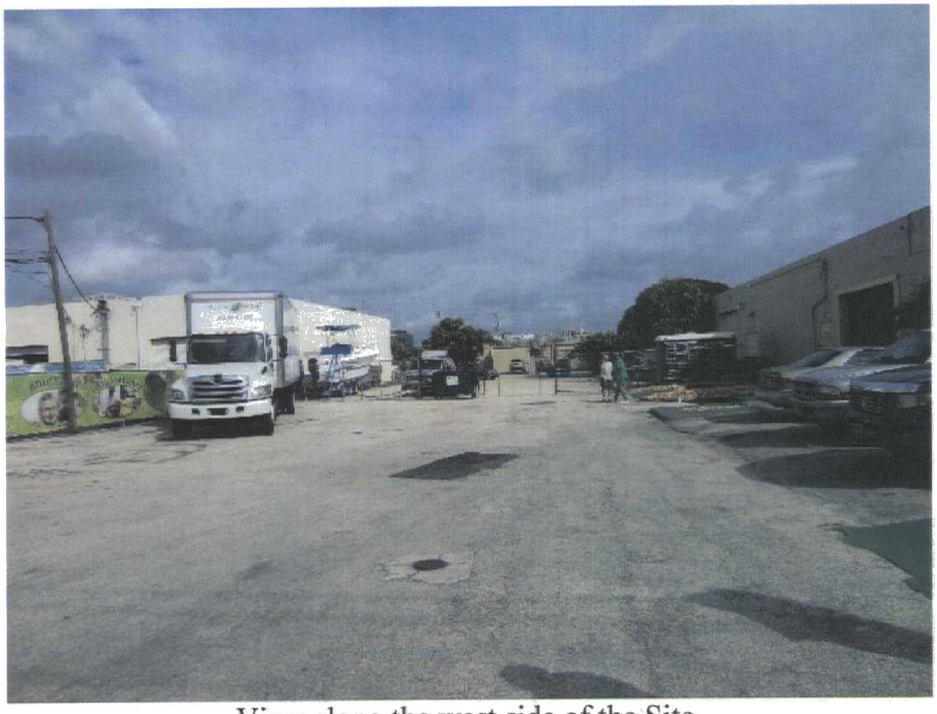
O&M costs were higher due to the need for ongoing groundwater monitoring following injections.

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy. The EPA plans to resample several wells on the east side of former Plant #1 to determine if the remedy requires optimization or not.

Appendix E: Photographs from Site Inspection Visit

Removal area and cover over former septic tank in the West Drainfield.



View along the west side of the Site.

Approximate location of former injection well used for disposal.

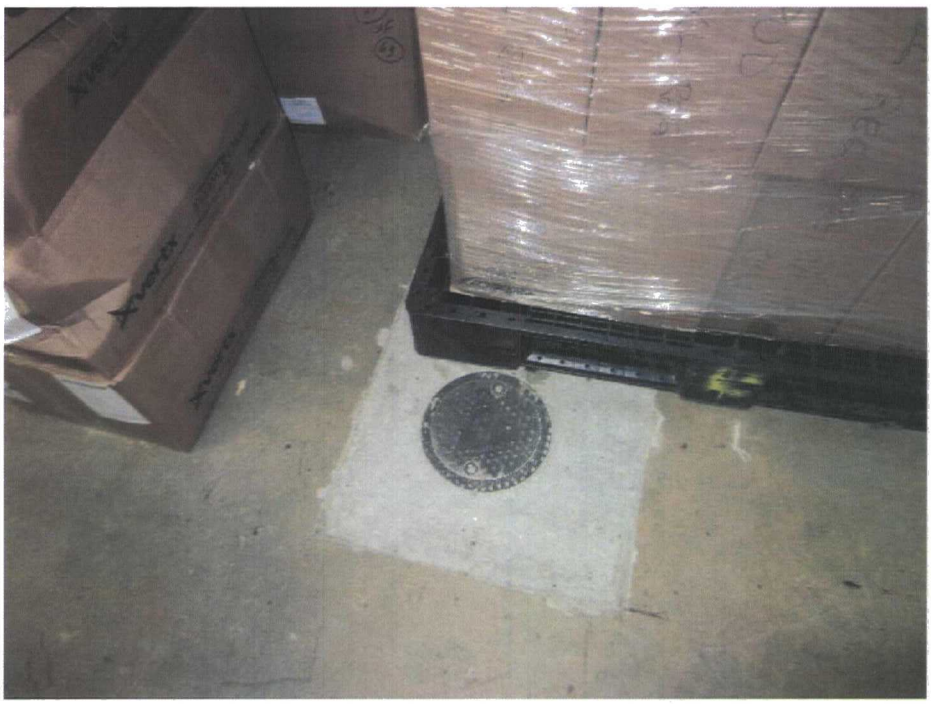
Former Plant 2, now used by commercial businesses.

Un-labeled monitoring well.

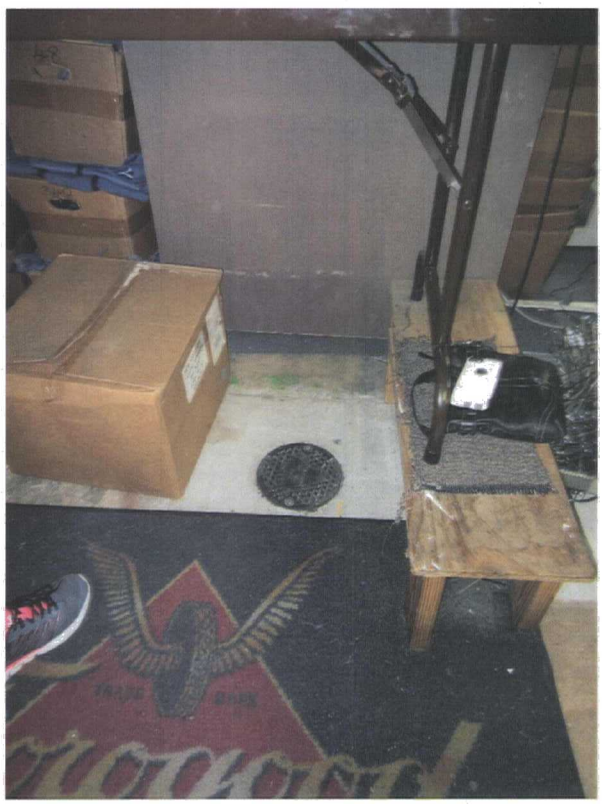
Site inspection participants observe monitoring well cluster 2.

Unsecured monitoring well in the northwest corner of Plant #1.

Continued commercial and industrial use in former Plant #1 area.



Secured monitoring well PMW-6 inside a uniform supply facility.



Secured injection well IW-1 inside a uniform manufacturing facility.

A view of the western portion of the Site, facing south.

Appendix F: Supplemental Information Supporting the Data Review

Figure F-1: Monitor Well Location Map

Sampling Investigation Report
Hollingsworth Solderless Terminal Company

Figure 1
Sample Location Map
Hollingsworth Solderless Terminal
Fort Lauderdale, Florida

SESD Project Number 15-0069

Table F-1: Current and Historical Groundwater Data – 2010 to 2016

	Trichloroethene (µg/L)				
Remedial Target Level	5.0 µg/L MCL, 3.0 µg/L Clean Up Goal, 300 µg/L FLNADC				
Station ID	November 2010	January 2012	April 2013	January 2015	May 2016
IW-1	0.50 U	--	--	12 U	0.50 U | 0.50 U
IW-5	0.50 U	--	--	0.50 U	0.50 U
IW-11	0.50 U	--	--	0.50 U	0.50 U
IW-12	0.50 U	--	--	0.50 U	0.50 U
IW-14	0.50 U,O	--	--	0.50 U	0.50 U
PMW-1	0.50 U,O | 0.50 U,O	0.50 U	0.50 U	0.50 U | 0.50 U	0.50 U
PMW-2	0.50 U	--	--	0.50 U	**0.51**
PMW-3	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
PMW-5	0.50 U,O	--	--	--	0.50 U
PMW-6	0.50 U	--	--	--	0.50 U
PMW-7	0.50 U	--	--	0.50 U	0.50 U
RW-1	**1.4**	--	0.50 U	**0.70** | **0.62**	**0.25 J**
RW-2	**0.13 J,O**	0.50 U | 0.50 U	0.50 U | 0.50 U	0.50 U	0.50 U

	Vinyl Chloride (µg/L)				
Remedial Target Level	2.0 µg/L MCL, 1.0 µg/L Clean Up Goal, 100 µg/L FLNADC				
Station ID	November 2010	January 2012	April 2013	January 2015	May 2016
IW-1	**1.1**	--	--	**1,100**	**1.3** | **1.6**
IW-5	**0.46**	--	--	0.50 U	0.50 U
IW-11	**0.24**	--	--	**0.74**	0.50 U
IW-12	**0.022**	--	--	0.50 U	0.50 U
IW-14	**0.94 O**	--	--	0.50 U	0.50 U
PMW-1	**36 O** | **34 O**	**26**	**6.8**	**3.9** | **3.8**	**1.1**
PMW-2	**0.032 O**	--	--	0.50 U	0.50 U
PMW-3	**8.7 O**	**2.4**	**4.5**	**0.39 J,O**	**0.14 J,O**
PMW-5	**0.98 O**	--	--	--	**0.35 J,O**
PMW-6	**0.11**	--	--	--	**0.57**
PMW-7	**0.10 O**	--	--	0.50 U	0.50 U
RW-1	**3.8**	--	**1.3**	**1.4** | **1.4**	**0.88**
RW-2	**120**	**3.9** | **3.9**	**48** | **50**	**35**	**45**

Detections are bold. Data shaded exceed a Remedial Target Level.
U - The analyte was not detected at or above the reporting limit.
J - The identification of the analyte is acceptable; the reported value is an estimate.
O - Additional data qualifier. See Final Analytical Report for qualifier.

Table F-1: Current and Historical Groundwater Data – 2010 to 2016 (continued)

Remedial Target Level	cis-1,2-Dichloroethene (µg/L)				
	70 µg/L MCL, 70 µg/L Clean Up Goal, 700 µg/L FLNADC				
Station ID	November 2010	January 2012	April 2013	January 2015	May 2016
IW-1	0.50 U	--	--	250	0.26 J,O | 0.31 J,O
IW-5	**0.25 J,O**	--	--	0.50 U	0.50 U
IW-11	**0.39 J,O**	--	--	0.50 U	0.50 U
IW-12	0.50 U	--	--	0.50 U	0.50 U
IW-14	**0.20 J,O**	--	--	0.50 U	0.50 U
PMW-1	**38 O** | **37 O**	**31**	**7.2**	**2.2** | **2.2**	**1.2**
PMW-2	0.50 U	--	--	0.50 U	**0.69**
PMW-3	**1.3 O**	**0.46, J,O**	**2.7**	**0.20 J,O**	0.50 U
PMW-5	**0.63 O**	--	--	--	**1.0**
PMW-6	0.50 U	--	--	--	0.50 U
PMW-7	**0.28 J,O**	--	--	**0.22 J,O**	0.50 U
RW-1	7.7	--	**1.0**	**1.5** | **1.4**	**1.5**
RW-2	**17**	**2.0** | **2.1**	**14** | **15**	**55**	**12**

Remedial Target Level	trans-1,2-Dichloroethene (µg/L)				
	100 µg/L MCL, 100 µg/L Clean Up Goal, 1,000 µg/L FLNADC				
Station ID	November 2010	January 2012	April 2013	January 2015	May 2016
IW-1	0.50 U	--	--	**8.8 J, O**	**0.44 J** | **0.60**
IW-5	0.50 U	--	--	0.50 U	0.50 U
IW11	0.50 U	--	--	0.50 U	0.50 U
IW-12	0.50 U	--	--	0.50 U	0.50 U
IW-14	**1.0 O**	--	--	0.50 U	0.50 U
PMW-1	**1.8 O** | **1.9 O**	--	--	**0.21 J,O** | **0.19 J,O**	0.50 U
PMW-2	0.50 U	--	--	0.50 U	0.50 U
PMW-3	**0.29 J,O**	--	--	0.50 U	0.50 U
PMW-5	0.50 U	--	--	--	0.50 U
PMW-6	0.50 U	--	--	--	0.50 U
PMW-7	0.50 U	--	--	0.50U	0.50 U
RW-1	**0.47 J,O**	--	--	0.50 U | 0.50 U	0.50 U
RW-2	**2.2**	--	--	**0.46 J,O**	**0.73**

Detections are bold. Data shaded exceed a Remedial Target Level.
U - The analyte was not detected at or above the reporting limit.
J - The identification of the analyte is acceptable; the reported value is an estimate.
O - Additional data qualifier. See Final Analytical Report for qualifier.

Figure F-2: Summary of Cis-2DCE and Vinyl Chloride 2015 Groundwater Results

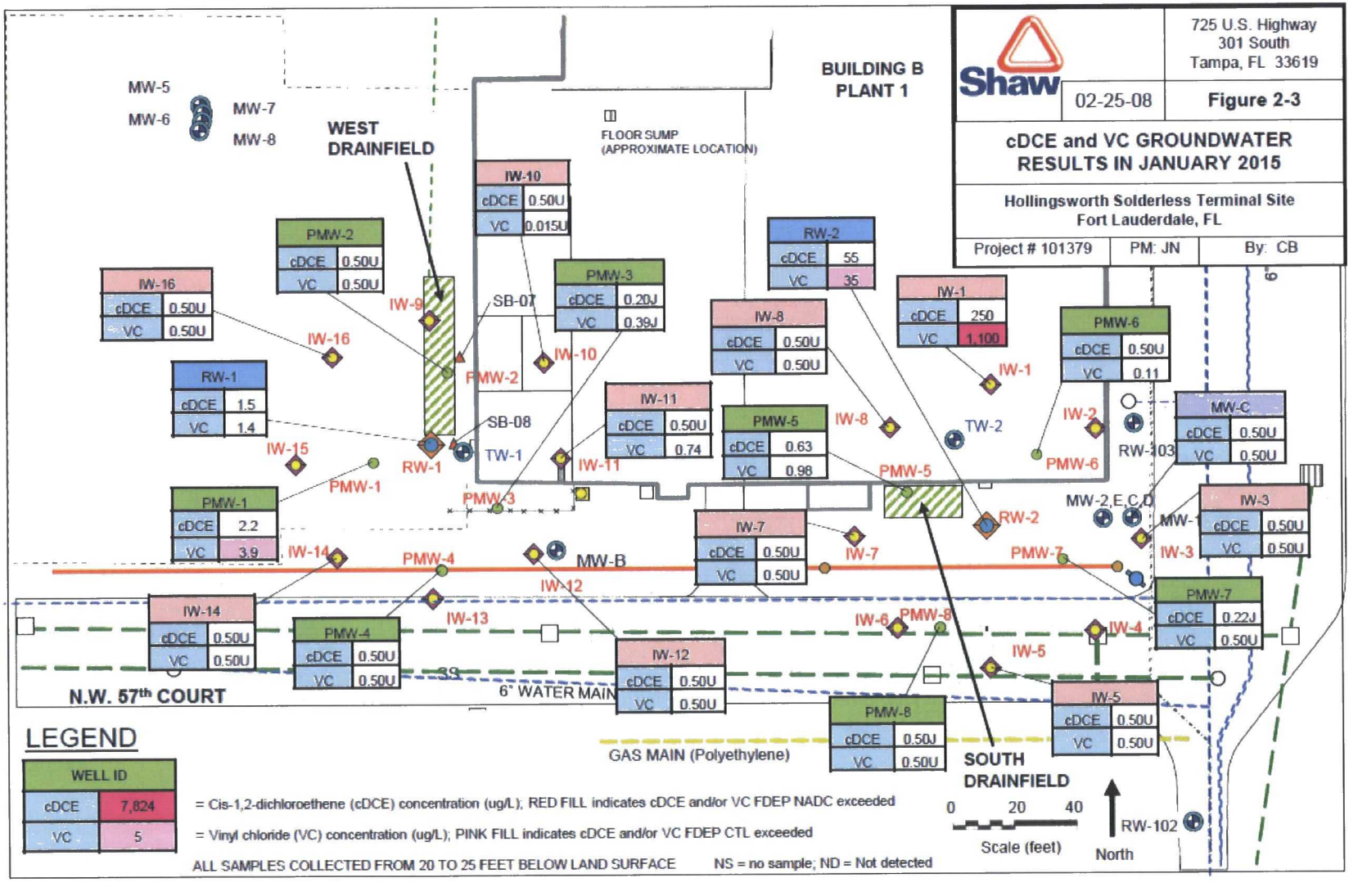
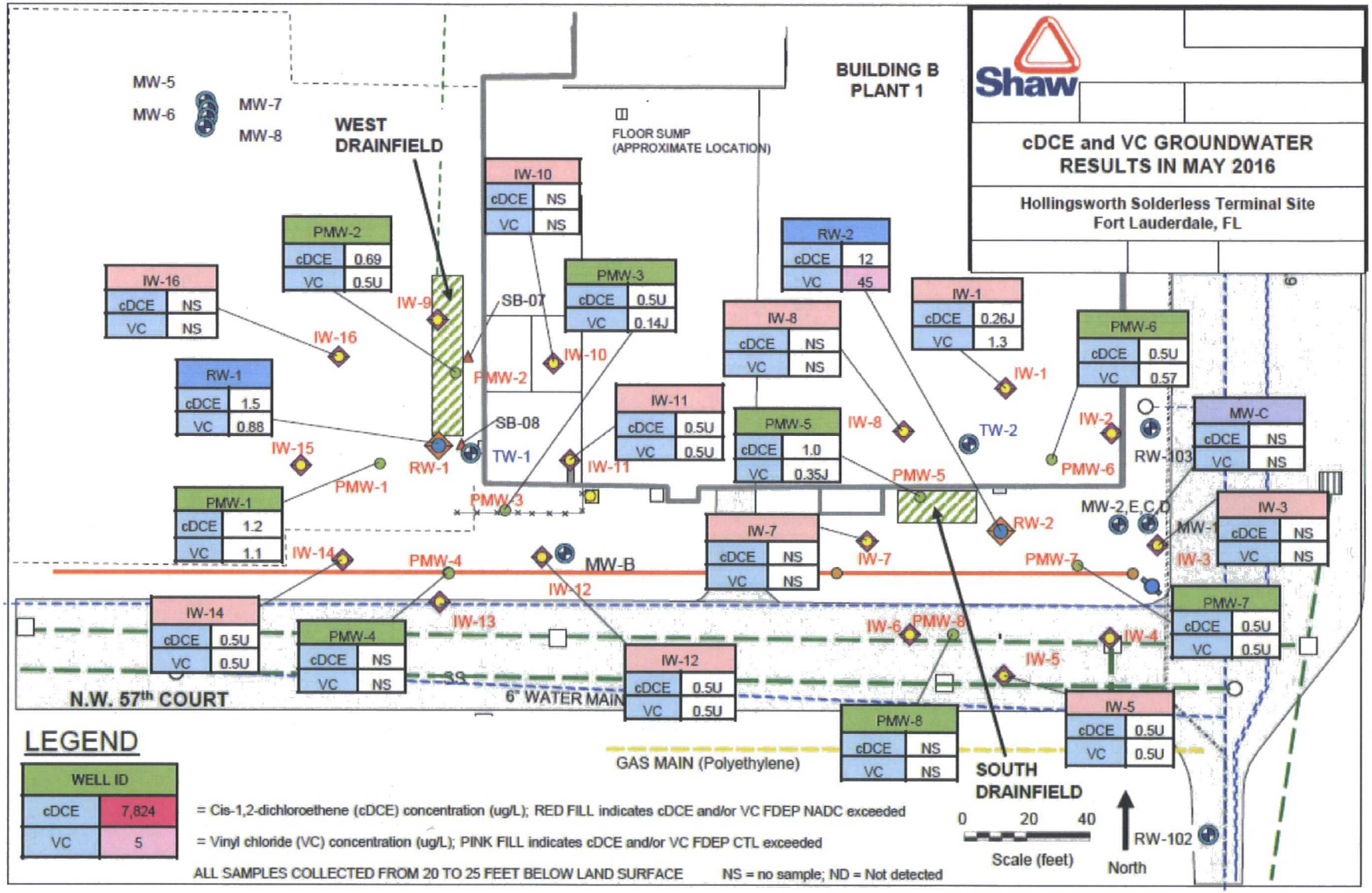


Figure F-3: Summary of Cis-12DCE and Vinyl Chloride 2016 Groundwater Results



Appendix G: Risk Assessment Analysis in Support of Question B

The 1986 ROD cleanup goals for soil in the East Drainfield were soil concentrations that did not result in exceedance of the EPA's Extraction Procedure Toxicity Characteristics (EP) toxicity test results for copper, lead and nickel, while a level of 1 mg/kg was established for total VOCs. The EP toxicity criteria have not changed since the 1986 ROD. The protectiveness of the soil cleanup goal of 1 mg/kg for total VOCs cannot be evaluated because the value is not chemical-specific. However, in the 2001 ESD, the EPA developed chemical-specific soil cleanup goals for three VOCs (trans12DCE, TCE and vinyl chloride) based on leaching to groundwater. To determine if the leachability-based levels are also protective for direct contact, the cleanup levels were compared to the EPA's most current residential-based RSLs for soil as well as the state SCTLs established under FAC Chapter 62-777. As demonstrated in Table G-1, the remedial goals established in the ESD remain valid because the relative risk associated with the goals based on the EPA's RSLs demonstrates that the remediation goals are below 1 x 10^{-6}, the lower bound of the EPA's risk management range of 1 x 10^{-6} to 1 x 10^{-4}, and below the EPA's target noncancer hazard quotient (HQ) of 1.0 for residential exposure. The risks are also below FDEP's target level of 1 x 10^{-6}.

Table G-1: Evaluation of Soil Cleanup Goals

COC	2001 ESD Cleanup Goals (mg/kg)	State Residential SCTL Direct Contact (mg/kg)	EPA Residential Soil RSLs (mg/kg)[a]		Relative Risk of 2001 ESD Remedial Goal		Cleanup Goal Exceeds State SCTL?
			Cancer Risk 1 x 10^{-6}	Noncancer HQ = 1	Cancer Risk[b]	Noncancer HQ	
Trans-1,2-dichloroethylene	0.4	53	NA	1,600	--	0.0003	No
Trichloroethylene	0.030	6.4	0.94	4.1	3.2 x 10^{-8}	0.007	No
Vinyl chloride	0.007	0.2	0.06	70	1.2 x 10^{-7}	0.0001	No

Notes:

a. The current RSLs are available at http://www.epa.gov/risk/risk-based-screening-table-generic-tables (accessed 12/28/2015).

b. Cancer risks calculated using the following equation:
Cancer risk = (Cleanup level ÷ cancer risk-based RSL) × 10^{-6}
Noncancer HQ = Cleanup level ÷ non-cancer RSL

NA – toxicity value not established for this COC.

In addition, the groundwater cleanup goals were ARARs and remain valid since the values have not changed since the 2008 AROD. However, to evaluate the effect of any changes of toxicity values on the groundwater cleanup goals, a screening-level risk evaluation was conducted. As shown in Table G-2 only the cleanup goal for cis-12DCE results in a noncancer HQ slightly greater than 1.0. The cleanup goal is based on the federal and state MCL of 70 µg/L which remain current. In addition, the EPA reviewed cis-12DCE as part of the Six Year Review and determined that the MCL is still protective of human health.

Table G-2: Evaluation of Groundwater Cleanup Goals

COC	2008 AROD Cleanup Goals (µg/L)	State Residential GCTL (µg/L)	EPA Tap Water RSLs (µg/L)[a]		Relative Risk		Cleanup Goal Exceeds State GCTL?
			Cancer Risk 1×10^{-6}	Noncancer HQ = 1	Cancer Risk[b]	Noncancer HQ	
cis-12DCE	70	70	NA	36	--	**1.9**	No
trans12DCE	100	100	NA	360	==	0.28	No
TCE	3.0	3	0.49	2.8	6.1×10^{-6}	1	No
Vinyl chloride	1.0	1	0.019	44	5.3×10^{-5}	0.023	No

Notes:

a. The current RSLs are available at http://www.epa.gov/risk/risk-based-screening-table-generic-tables (accessed 7/20/2016).

b. Cancer risks calculated using the following equation:
Cancer risk = (Cleanup level ÷ cancer risk-based RSL) × 10^{-6}
Noncancer HQ = Cleanup level ÷ non-cancer RSL

NA – toxicity value not established for this COC.

VOCs are present in groundwater underlying the Site. Therefore, vapor intrusion exposure is a potential completed exposure pathway for Plant #1 where residual groundwater contamination remains. A screening-level vapor intrusion evaluation was conducted to determine if this potential exposure pathway requires more in-depth analysis. Soil vapor samples have not been collected near Plant #1. Therefore, the most current groundwater data collected in May 2016 from wells located within the building footprint or adjacent to the building were used. Those COCs exceeding the ROD cleanup goals were included. The only COC that exceeded the ROD cleanup goal in the May 2016 data set is vinyl chloride.

The maximum detections of vinyl chloride in the May 2016 sampling event was entered into the EPA's Vapor Intrusion Screening Level (VISL) calculator to evaluate this exposure pathway. As shown in Table G-3, the maximum concentration of VOCs observed in 2016 was in RW-2, resulting in cancer risks within the EPA's risk management range of 1×10^{-6} to 1×10^{-4} and below the EPA's noncancer HQ of 1.0. These results indicate that the vapor intrusion exposure pathway does not require further evaluation as the concentrations continue to decline over time.

Table G-3: Screening-Level Vapor Intrusion Evaluation at the Plant Building #1

COC	Groundwater Concentration Detected in May 2016 (µg/L)[a]	2015 VISL Calculator[b] (Average groundwater temperature 25°C)	
		Industrial Exposure	
		Cancer Risk	Noncancer HQ
Maximum near Plant #1			
Vinyl chloride	45 (RW-2)	1.8×10^{-5}	0.12

Notes:

a. Data obtained from the EPA on June 2, 2016. Samples collected by the EPA's Science and Ecosystem Support Division (SESD) in May 2016.

b. VISL calculator version 3.46 accessed at http://www.epa.gov/vaporintrusion

The U.S. Environmental Protection Agency, Region 4 Announces the Completion of the Fifth Five-Year Review for the Hollingsworth Solderless Terminal Superfund Site, Fort Lauderdale, Broward County, Florida

Purpose/Objective: The Comprehensive Environmental Response, Compensation, and Liability Act, as amended by the Superfund Amendments and Reauthorization Act of 1986, requires review of remedial actions addressing hazardous substances every five years to make sure the selected remedies remain protective of human health and the environment. In 2016, EPA conducted the fifth Five-Year Review of the remedies for contaminated media (groundwater and soils) associated with the Hollingsworth Solderless Terminal Superfund site (the Site) in Fort Lauderdale, Florida.

Site Background: The 3.5-acre area is located in a commercial and industrial area in Fort Lauderdale. The Hollingsworth Company made solderless electrical connectors on site from 1968 to 1982, when it filed for bankruptcy. In 1982, the company dismantled and sold its plant equipment. The facility was purchased in 2004 and remodeled. Today, several tenants use the area for commercial purposes. Past soldering operations resulted in the contamination of soil and groundwater with solvents and heavy metals. EPA listed the Site on the Superfund program's National Priorities List (NPL) in 1983.

Cleanup Actions: EPA selected the Site's cleanup plan in the Site's 1986 Record of Decision (ROD), 2001 Explanation of Significant Differences (ESD) and 2008 Amended ROD. The plan included treatment of volatile organic compounds (VOCs) in the soil near the former East Drainfield, recovery and treatment of contaminated groundwater, excavation of VOC-contaminated soil, bioremediation of groundwater near the former South Drainfield and septic tank in the West Drainfield, and institutional controls to restrict groundwater use.

Five-Year Review Protectiveness Statement: The remedy currently protects human health and the environment because contaminated soils have been removed such that no land use restrictions are needed, groundwater contamination remains on site and institutional controls are in place that restrict the use of groundwater at the Site. In order for the remedy to be protective in the long term, site monitoring wells need to be repaired and monitored on a regular basis.

Five-Year Review Schedule: EPA completed the fifth Five-Year Review process for the Site in September 2016. The next Five-Year Review for the Site is required within five years of the signature of this Five-Year Review, by September 2021.

Contact Information: Community members who have questions about the Site or the Five-Year Review process are asked to contact:

Galo Jackson, EPA Remedial Project Manager
Phone: (404) 562-8937
Email: jackson.galo@epa.gov

L'Tonya Spencer, EPA Community Involvement Coordinator
Phone: (404) 562-8913 | (800) 564-7577 (toll-free)
Email: spencer.latonya@epa.gov

Mailing Address: U.S. EPA Region 4, 61 Forsyth Street, S.W., 11th Floor, Atlanta, GA 30303-8960

Additional information is available at the Site's local document repository, located at Broward County Public Library, 100 South Andrews Avenue, Level 5, Fort Lauderdale, Florida 33301, and online at:
https://cumulis.epa.gov/supercpad/CurSites/csitinfo.cfm?id=0400548&msspp=med.